THE

QUARTERLY JOURNAL

OF

ECONOMICS

FEBRUARY, 1903

A STUDY IN THE SCIENCE OF WELFARE.

In the development of economics, according to modern scientific methods, perhaps the most urgent demand is that which calls for a concept which will bring together all the various truths that have been presented, and embody them in a consecutively developed and unified structure. From the great mass of material which has been accumulated, those elements which are adequate and useful must be taken and assembled in their proper places, the portions lacking must be supplied, and the whole placed upon a foundation of well-defined conceptions of the actual facts of experience. Such a concept may be found in "Utility of Time."

In a general way, "utility of time" is simply an expression for the worth of life. According to this view, the whole science of economics is concerned with investigating the general conditions and relations involved in determining how each individual must spend his time in order to promote his greatest welfare, which, of course, includes the welfare of his family, his country, and his race. In the sense in which economics is chiefly con-

cerned with it, welfare is promoted through the instrumentality of material things which must be brought into existence or exploited by the individual,—a process that involves more or less effort or sacrifice. Stated in terms of the psychological feelings of the individual, this production of material things for the purpose of satisfying needs or desires, or of gaining pleasure, involves an expenditure of effort which is accompanied by pain or disagreeable feelings. Therefore, the real utility of the time spent in the pursuit of this pleasure is measured by the difference between the pleasure received from the consumption of the material things and the pain experienced in their production. Stated in terms of the metabolism of the organism, with which the production of wealth possesses certain analogies, the utility of the time spent in the production of anything is measured by the difference between the building up or preservation of organic tissue finally resulting from the act and the tearing down of tissue, involved in the effort of production. Stated psychologically, it is a person's estimate of the value of conduct, and, therefore, leads to a view of actual practice. Stated physiologically, it is a theoretically exact estimate of the value of an act of conduct, and leads to a view of that practice which would be conducive to maximum welfare.

If the effort expended in any act of production during a given time be gradually increased, a point will finally be reached where the pain experienced will be as great as the pleasure, or satisfaction of want, finally resulting from it. Since the gain will, then, be no greater than the loss, the utility of time, which is the final difference between the gain and loss of pleasure, will at this point be zero. Therefore, between this point and the point at which there is no expenditure of effort at all there must be some point at which the utility of time is a maximum. It will simplify the treatment, therefore, of

exchange, capital, land, wages, etc., if we always assume that the intensity of effort, the pain experienced, during an act of production, has such a value that the utility of time at any moment during an act of production, or the final difference between the gain and loss of pleasure, or the welfare involved in the act, is always a maximum.

In the apportionment of time to the production of goods of different kinds, a maximum satisfaction of want will be afforded when the utility of the last increment of the time spent in every kind of production has the same value. And, when this is the case, the ratio of the rates of production of the last increments of any two kinds of products will be inversely proportional to the ratio of their respective utilities.

The relative utilities of time of any two individuals in production will depend upon differences in their conditions, that cause differences in their rates of production and in the utilities of their products. Their relative rates of production will depend upon differences in their skill and in the quantity of capital they possess, and the relative utilities of their product will depend upon differences in the quantities of other products already available for their consumption at the same time.

When the utilities of time of two individuals in production are a maximum, the rate of exchange of their products must be proportional to the ratio of their rates of production of the products, modified by their relative skill and capital, and must also be inversely proportional to the ratio of the utilities of the two products to the two individuals, modified by the relative quantities of other products which are also available for their consumption at the same time; that is, the utilities of time of two parties to an exchange must be equal, except as modified by the factors of skill, capital, and other available products. Practically, the final equilibrium of exchange is held at this point because individuals are always seeking to become engaged in those

industries the rewards of which are such as afford a high utility of time, and are leaving those in which the utility of time has become low, which sets up a movement of prices towards the equilibrium point except when checked by conditions of monopoly. It will be seen by this explanation of exchange that such non-emerging quantities as the merchant's utility of the goods he sells and rate of production of the goods he buys do not enter into the problem, and that the classical and Austrian theories of value are reconciled, since the ratio of the rates of production, which corresponds to the cost of production of the classical theory, must at the final equilibrium be equal to the inverse ratio of the utilities of products, as defined by the Austrian theory.

In the apportionment of time between the production of present goods and the production of capital the maximum satisfaction of want is determined in precisely the same manner as in the apportionment of time between the production of goods of different kinds, but the utility of the capital is arrived at indirectly by its consumption in the production of goods in the future. The relations arising from this apportionment are of peculiar importance, as will be seen when we come to the treatment of interest, and may conveniently be represented by diagrams. In diagram 1 (see page 240) let the distance from O to a point T in the line OT represent the time spent in the production of a given capital. Let the rate at which this capital is being produced at any moment be represented by the height of the point in the line cc, vertically over the point T in the line OT that marks the time which has already been spent in the production of the given quantity of capital. Suppose the rate of production of capital remains the same at all times. Then the line cc which repre nts this rate of production of capital will be a straigh line parallel to the line OT; and the quantity of capit that has been produced at any

time will be represented by the area enclosed by the lines cc, OT, OF, and a vertical line raised from the point T that marks the length of the time that has been spent in the production of the given capital. Now suppose that during a subsequent period of time, while goods are being produced, this capital is consumed in such production, and that the quantity of goods so produced is greater than it would have been if this capital had not been so consumed. Then the amount of this increase n the quantity of goods produced in this subsequent period, that results from each unit of capital produced in the preceding period, may be regarded as the yield of capital at the moment of its production. The value of this yield may be represented in the diagram by the height of a point in the line yy, vertically above the point T in the line OT, that marks the time at which the corresponding increment of the capital is being produced.

Then the virtual rate of production of goods during the actual production of capital is the product of the rate of production of capital and the yield of capital at any moment. Now goods that could be produced instead of the capital in the time spent in its production may be called present goods, as distinguished from the goods which finally result from the consumption of this capital, and which on account of their being obtained in some period of time subsequent to that in which the capital is produced, may be called future goods. The only object in spending time in the production of capital is that goods will finally result from such production, so that time spent in the production of capital may be regarded as virtually being spent in the production of future goods at a rate equal to the product of the rate of production of capital and the corresponding yield of capital. As in the case of capital, the value of this virtual rate of production of future goods may be represented by the height of a point in the line g_1g_2 vertically over the point T in the line OT,

that marks the time during which the given capital has been produced. If the rate of production of capital and the yield of capital are supposed, for convenience, to be constant at all times, then the line $g_t g_f$, which represents this virtual rate of production of future goods, will be a straight line parallel to the line OT, and the quantity of future goods that has been produced at any time, will be represented by the area enclosed by the lines $g_t g_f$, OT, OF, and a vertical line raised from the point T which marks the length of the time that has been spent in the production of the given capital.

Now, as capital is produced for the purpose of yielding goods by its consumption during a subsequent period, so the goods themselves are only brought into existence for the purpose of satisfying wants by their consumption. Then, for every increment in the quantity of future goods virtually produced in the present, there will be a corresponding increase in the satisfaction of wants resulting from the consumption of this increment. The ratio of this increase in satisfaction of wants to the rate at which these future goods are virtually being produced at any moment constitutes the utility of these goods. The value of this utility may be represented in the diagram by the height of a point in the line $u_t u_f$, vertically above the point T in the line OT, that marks the time at which the increment in the future goods is virtually being produced, since it results from the corresponding increment of capital that is actually being produced. The satisfaction of want finally resulting from the production of any increment of goods in a definite period of time will generally be greater than the satisfaction derived from the production of any additional increment during this time. As the stock of goods available for consumption during a definite time increases, the utility of each addition to the stock decreases, so the line $u_t u_f$ which represents the utility of the future goods will be the highest at the

commencement of the production of the capital, and gradually descend as the stock to be consumed increases. The ulterior object of the production of capital is to obtain the quantity of future goods that results from the time spent in such production; but the ultimate object sought is always to enjoy the increase in the satisfaction of wants that finally results from the production of the capital. And the utility of the time spent in the production of capital is the rate, with regard to this time, at which wants will finally be satisfied on account of the production of the capital. The utility of time at any moment in the virtual production of future goods by the actual production of capital is equal to the product of the virtual rate of production of future goods, and the corresponding utility of the future goods that are produced at this rate, or the product of the rate of production of capital, the corresponding yield of capital, and the corresponding utility of the future goods virtually produced at that moment. As in the case of capital and future goods, the value of this utility of time may be represented in the diagram by the height of a point in the line $w_f w_f$, vertically over the point T in the line OT, that marks the time during which the capital has been produced. Since the utility of future goods becomes less as the quantity produced increases, while the rate of production of future goods remains constant, as has been assumed, the utility of time in the production of capital — that is, in the virtual production of future goods — will become less as the quantity produced increases. So the line $w_f w_f$ will gradually descend from the beginning. The quantity of satisfaction of want that will finally result from the capital that has been produced at any moment is represented by the area enclosed by the lines $w_f w_f$, OT, OF, and a vertical line raised from the point T which marks the time that has been spent in the production of the given capital. Now suppose instead

of producing capital the given time is spent in the production of present goods. Let this time be represented in diagram 2 (see page 240) by the distance from O to a point T in the line OT. Suppose a gain results from the use of capital in the production of goods, then the line gg which represents the rate of production of present goods will not be as high as the line g_fg_f in diagram 1, which represents the virtual rate of production of future goods; and the difference in the height of the lines g_fg_f and gg will represent the gain, measured in goods, due to the use of capital in their production. Let the utility of present goods be represented by the line uu, and the utility of time at any moment in the production of present goods will be equal to the product of the rate of production of present goods and the utility of present goods produced at that time, which may be represented by the line ww. The quantity of satisfaction of want that results from the present goods that have been produced at any moment will then be represented by the area enclosed by the lines ww, OT, OP, and a vertical line raised from the point T in the line OT, which marks the time that has been spent in the production of the present goods.

Now let diagram 1 be superposed on diagram 2 in diagram 3 so that the distance between the lines OF and OP represents the present time that has to be divided between the production of present goods and the virtual production of future goods by the actual production of capital. Let the vertical line TT mark the division of the time between the production of present and future goods. Then the area enclosed by the lines gg, OT, OP, and TT, will represent the quantity of present goods actually produced; and the area enclosed by the lines g_fg_f, OT, OF, and TT, will represent the quantity of future goods, virtually produced during this time by the actual production of capital. The area enclosed by the lines gg, OT, TT,

and OF, represents the quantity of present goods that could have been produced in the time allotted to the virtual production of future goods. Therefore, the area enc osed by the lines g_fg_r, gg, TT, and OE, represents the difference between the quantity of future goods and present goods, that can be produced in the same time, or the gain in product afforded by the employment of capital in production. The relative values of the utilities of future goods as compared with present goods depend upon the conditions under which they are consumed in the satisfaction of wants. Suppose that without the production of capital the income in goods available for the satisfaction of wants remains the same at all times. Then the quantity of future goods derived from the consumption of capital in the future amounts to an addition to the stock of goods already available in the future, which stock equals the stock of present goods available in the present. Therefore, the first increment of the future goods virtually produced in the present will be consumed in the future as an additional increment to the stock of goods already available for consumption in the future. But the utility of the last increment of this stock already available in the future has the same va ue as the utility of the last increment of the equally large stock produced in the present. Hence the utility of the first increment of the future goods would, under these conditions, have about the same value as the last increment of the present goods, as represented in the diagram. If the ratio of the utility of the last increment of the stock of goods that could be produced in the present to the utility of the first increment of the future goods that is virtually produced by the production of capital in the present is greater than the ratio of the corresponding rate of production of the future goods to the corresponding rate of production of the present goods, then the utility of time in the production of present goods would always be greater than

the utility of time in the production of any future goods; that is, there would be no gain in the satisfaction of wants, to be derived from the production and use of capital. But, when the opposite condition exists between these ratios, the utility of time in the production of the first increment of future goods will be greater than the utility of time in the production of the increment of present goods that could be produced in the same time, as shown in the diagram by the difference between the height of the lines $w_f w_f$ and ww along the line OF, which represents the gain in satisfaction of wants realized in the production of the first increment of capital instead of an increment of present goods. But on account of the decrease in the utility of future goods, as the stock to be consumed increases, and the increase in the utility of the present goods, as the stock to be consumed diminishes, on account of the future goods being produced instead, the ratio of the utilities of present goods to future goods will finally become as great as the ratio of the rate of production of future goods to the rate of production of present goods: so that the utilities of time in the production of present goods and future goods will be equal; and beyond this point the satisfaction of wants will be greater in the production of present goods instead of future goods, as represented in the diagram by the difference between the height of the line ww and $w_f w_f$ to the right of the vertical line TT. The area enclosed by the lines ww, $w_f w_f$, and OP then represents the gain in the satisfaction of wants afforded by devoting a portion of the given time to the production of present goods instead of the virtual production of future goods; and the area enclosed by the lines $w_f w_f$, ww, and OF, represents the gain in the satisfaction of wants afforded by the devotion of the remaining portion of the given time to the virtual production of future goods by the actual production of capital instead of present goods.

This diagram now represents in a general way the economic condition of every individual. Suppose a day to be the period of time to be apportioned between the production of present goods and the production of capital. When the fortune and daily income are small, if a very small portion of the day be devoted to the virtual production of future goods, it would subtract so great an amount from the present daily rations that the utility of the present goods that could be produced in this time, would become so much greater than the utility of the future goods virtually so produced added to the future day's rations that, practically, the whole day should be devoted to the production of present goods in order to obtain a maximum satisfaction of want. On the other hand, when the fortune and daily income are great, the portion of the daily product required for current wants is comparatively so small that the devotion of nearly the whole day to the virtual production of future goods makes little difference in the utility of present goods; and, at the same time, the quantity of goods that are already available for the future is so great that the devotion of nearly the whole day to the virtual production of future goods will add to the quantity of goods already available so little, comparatively, that the utility of future goods will be lessened but slightly thereby, and the utility of time for the greater portion of the day will therefore be greater in the virtual production of future goods.

During that period in which the utility of a person's time is greatest in the production of present goods, we will refer to him as a proletaire; and, on the other hand, during that period in which the utility of a person's time is greatest in the virtual production of future goods by the actual production of capital, we will refer to him as a capitalist.

The relations between a capitalist and a proletaire with regard to the production of capital or future goods and

present goods, directly, by exchange, and by consumption of allotrious capital,* admit of four simple combinations. With regard to production in the first period, both the capitalist and the proletaire may produce directly those products which they finally consume or they may produce them indirectly by really producing something else and exchanging for them. With regard to the consumption of capital in the subsequent period in the production of goods, the capitalist may consume the capital himself in this production or he may allow some one else to consume it who returns to him the goods resulting from such consumption.

1. In the simplest condition the proletaire produces present goods for the immediate satisfaction of want, while the capitalist produces capital which he himself consumes in the subsequent period in the production of goods for the satisfaction of want.

2. The proletaire may produce capital and exchange it with capitalist for the present goods that he wants, thus producing them indirectly; and, although he receives a smaller quantity of present goods than the quantity of future goods which would be yielded by the capital he gives in exchange, he may enjoy, as in the exchange of goods of different kinds, a barterage gain from the transaction, which consists of the difference between the utility of the present goods he gets in exchange for the capital and the utility of the present goods he could himself produce in the time that he spends in the production of the capital he gives in exchange for present goods. On the other hand, the capitalist may produce present goods and exchange them for the capital that he wants for consumption in a subsequent period in the production of goods. And he also may realize a barterage gain in the transaction, which consists of the difference between the

* Allotrious capital is capital that is owned by one person and used in actual production by another.

utility of the future goods he derives from the consumption of the capital he receives in exchange for the present goods and the utility of the future goods that would be yielded by the capital that he could himself produce in the time that he spends in the production of the present goods which he gives in exchange for the capital. As measured in goods, this barterage gain consists of the difference between the quantity of goods yielded by the consumption of the capital the capitalist receives and the quantity of goods that would be yielded by the quantity of capital that he could himself produce in the time that he spends in the production of the present goods which he exchanges for the capital. On account of the specialization of industry, which gives rise to differences in their rates of production, both the capitalist and the proletaire may, as in the exchange of goods of different kinds, thus realize by indirect production a gain in utility of time over that which they could realize in direct production.

3. If for any reason, such as the fortune of the proletaire being much less than that of the capitalist, the yield of capital, when consumed by the proletaire, is greater than its yield when consumed by the capitalist himself, a gain may be realized by both if the capitalist allows the proletaire to consume his capital in the production of future goods, and the proletaire returns to the capitalist the yield of this capital from such consumption less some portion of the difference between this yield and its yield when consumed by the capitalist himself. The gain thus realized may be referred to as a loanage gain, that in the case of the proletaire consists of the difference between the yield of the allotrious capital from its consumption by him in the production of goods in the future and the quantity of these goods returned to the capitalist. In the case of the capitalist his loanage gain consists in the difference between the quantity of goods received from the proletaire and the quantity of the goods that would be yielded

by the capital if the capitalist consumed it in production himself. Thus, on account of the difference between the quantity of goods yielded from the consumption of the capital by the proletaire and the quantity of goods yielded from its consumption by the capitalist himself, both the capitalist and the proletaire may finally realize a greater welfare from the consumption by the proletaire of capital belonging to the capitalist than could be realized from the consumption of the capital by the capitalist himself instead of thus allowing the proletaire to consume it. This transaction takes the form of an exchange of capital for future goods; but the distribution of the loanage, by the rate at which the future goods are exchanged for the capital, is not determined by the equivalent utilities of time of the two parties, as in the case of barterage in the exchange of capital for present goods or in the exchange of goods of different kinds, but is determined by other relations between the capitalist and the proletaire, as is subsequently shown.

4. The combination of indirect production by the exchange of capital for present goods and the consumption of allotrious capital by the proletaire takes the form of the exchange of future goods for present goods, in which both barterage and loanage gains are realized in the same transaction. As in the simple case (2) of indirect production, the proletaire produces capital and gets present goods; but, instead of immediately parting with the capital in exchange for them, he consumes the capital in the subsequent production of future goods which he gives, instead of the capital, in exchange for the present goods. The capitalist produces present goods and delivers them to the proletaire, as in the simple case of indirect production; but, instead of getting the capital in exchange for them and consuming it himself in the subsequent production of goods, he gets the future goods that result from this consumption of the capital by the proletaire. The

barterage gain thus arising on account of differences in their rates of production and the loanage gain arising on account of differences in yield of capital are distributed between the capitalist and the proletaire in the same manner as in the simple cases 2 and 3.

In actual practice it is not often that any of the four cases stated appear in the simple form here presented; but, however complex a transaction may become, it can only be composed of these fundamental elements and that of the exchange of products of different kinds.

Let us suppose that a proletaire borrows $100 of a capitalist and returns $107 to him at the end of a year. Superficially, this is a case of the exchange of future goods for present goods. If the proletaire buys present goods for consumption with the money, and uses his capital in the subsequent production of goods from the proceeds of which he returns the $107 to the capitalist, it becomes so in reality, because the conditions are virtually the same as if he received present goods from the capitalist in exchange for future goods. But, if he buys capital with the money and subsequently consumes it in the production of goods, then the conditions will correspond to case 3, the exchange of future goods for capital, where the proletaire borrows the capital directly from the capitalist. Now let us further suppose that the total product of the proletaire is, on account of the consumption of this capital, $109 greater than it would otherwise be; and suppose, also, that the capitalist could realize in goods in the future $101 from the capital if he consumed it himself, and that he could produce $100 in present goods in the same time that he spends in the production of the capital, then the $101 — $100 = $1 is the capitalist's surplus product from the use of capital in production, the $107 — $101 = $6 is the capitalist's loanage from the exchange of capital for future goods, and the $109 — $107 = $2 is the proletaire's loanage from the exchange of future goods

for capital. Then the result of the whole transaction to the proletaire amounts simply to a clear gain in his earnings of the $2 loanage during the time that he spends in the consumption of the capital. The virtual production of the future goods took place in a preceding period during the time spent in the production of the capital, but now their real production consists in the total increase in the quantity of goods produced by the proletaire which is due to his consumption of the capital. The actual interest payment made by the proletaire is, then, the surplus product due to the consumption of the capital by proletaire, less the share of the loanage which he retains; and it also is equal to the surplus product that could be realized from the consumption of the capital by the capitalist plus the share of the loanage which the capitalist gets. How far this interest may represent surplus utility or surplus "value" has already been shown in connection with the exchange of capital for present goods.

Now let us suppose, still further, that the proletaire gives to the capitalist the total product of his labor during the time spent in the consumption of the capital in exchange for other goods; that is, the capitalist, instead of consuming his capital himself, places it in the hands of the proletaire for consumption, and gets the total product that the proletaire produces during the time he spends in the consumption of the capital. This total product represents: the goods that the proletaire could produce if he did not consume this capital in production, plus the goods which could have been produced instead of the capital during the time that was spent in its production, plus the surplus product that the capitalist could realize from the consumption of the capital himself, plus the capitalist's share of the loanage, plus the proletaire's share of the loanage, the same as if he simply borrowed the capital and paid interest for it. In exchange for this product the capitalist gives to the proletaire, as wages, a quantity of

other goods which represents: the goods which the proletaire could produce if he did not consume this capital in production, plus the proletaire's share of the loanage that he gets, the same as if he simply borrowed the capital and paid interest for it. Then the profit realized by the capitalist, on account of the capital being consumed by the proletaire, is equal to: the surplus product that could be realized by the capitalist from his own consumption of the capital, plus his share of the loanage, and corresponds to the interest he would get from a loan of the capital.

To avoid any misapprehension, it is, perhaps, necessary to point out that, in the discussion of interest and wages, the terms "capitalist" and "proletaire" are used only on account of the conditions of the preceding period during which the capital was produced. With regard to the period in which the capital is consumed in production, the nature of the product might be such that the terms would not be at all applicable to the respective parties to the transaction.

It has been shown that the economy of the use of allotrious capital arises fundamentally from the condition in which the yield of capital in consumption by one individual is greater than its yield in consumption by another. So the reconciliation of an approximately equal utility of present goods and future goods, which is necessary to account for the "profit" which common observation shows is realized from the production and consumption of capital, with a greater utility of present goods than of future goods, which is necessary to account for the known rate of exchange of capital, or future goods, with present goods, is found in the apportionment of time that every one must make between the production of present goods and the production of capital from which future goods are derived. The capitalist, on account of the approximate equality of the utilities of future goods and present goods, realizes a surplus in satisfaction of want from the greater quantity of future goods derived from capital over what he could realize from

the lesser quantity of present goods paid out for capital or sacrificed by its production, which surplus approaches a value corresponding to the difference between the quantity of the future goods received and the present goods paid out or sacrificed. The proletaire, on account of the far greater utility to him of present than of future goods, realizes a surplus in satisfaction of want from the lesser quantity of present goods received in exchange for capital over what he could realize from the greater quantity of future goods which would be yielded by the capital paid out for present goods or sacrificed by their production. He can therefore afford to take the lesser quantity of present goods in exchange for the capital from which the greater quantity of future goods is derived. This surplus, however, on account of the nature of the case, can have no corresponding representation in terms of quantities of goods. With the exception of barterage and loanage gains, these conditions are represented in diagram 3 (see page 240), where the surplus utility of the capitalist's time in the indirect production of capital is shown on the left of the line TT as Surplus "Value," and the surplus utility of the proletaire's time in the indirect production of present goods is shown on the right as Residual Utility.

By considering economic conditions from the standpoint represented by the line TT in the diagram, Böhm-Bawerk finds the "value" of future goods to be less than that of present goods, and thus accounts for the payment of interest. But, by taking this as a universal condition, he deprives himself of the means by which he could account for the production of capital. If the utility of the quantity of future goods derived from capital is no greater than the utility of the smaller quantity of present goods paid for the future goods, what is the reason for the purchase of the future goods? The process of the ripening of the future commodity into present commodity in the hands of the entrepreneur, as described on page 301 of *Positive*

Theory of Capital,* is hardly an adequate explanation in the face of the statement on page 417 of *Capital and Interest*,† that "in our method of valuing the goods which we possess we follow unhesitatingly the principle of anticipating future use. We do not estimate the value of our

* "Knowing now that the undertaker buys the future commodity, 'Means of Production,' for a smaller number of pieces of present goods than the number of pieces which will compose their future product, we ask, How does he come by his profit? The answer is very simple. From his 'cheap' purchase, indeed, he does not get any result; for, estimated by its present value, the commodity is dear. The profit comes first into existence in his hand. It is during the progress of production that the future commodity ripens gradually into the present commodity, and grows at the same time to the full value of the present commodity. Time elapses; what was next year becomes this year; and on the great changing stage of life everything — man himself, his wants and wishes, and with them the standard by which he measures his goods — shifts one scene forward. The wants which, last year, were future wants, and little thought of as such, attain their full strength and their right of present wants; and a similar advance attends the goods which supply these wants. A year ago they were goods of the future, and had to be content with the lower value that attached to them as such: to-day they are present goods, and enjoy the full value of such goods. A year ago it was to their prejudice that they were measured in the then 'present' goods. To-day that standard has sunk into the past; and, if the men of to-day measure them again in 'present' goods, they stand equal with them in the first and chiefest rank, and suffer nothing by the comparison. In short, as time passes, it cancels the causes by reason of which the then future commodity suffers a shrinkage of value, and brings it up to the full value of the present goods. The increment of value is the profit of capital." Böhm-Bawerk, *Positive Theory of Capital*, p. 301.

† "Indeed, even in the case of wine which improves in lying, it is not by any means self-evident that the wine, which has grown better, is of more value than the inferior and unripe wine. For, in our method of valuing the goods which we possess, we follow unhesitatingly the principle of anticipating future use. We do not estimate the value of our goods according to the use — at least, we do not value them *only* according to the use — which they bring us at the moment, but also according to that use which they will bring us in the future. We ascribe to the field, which, for the moment, lies useless in fallow, a value with regard to the crop which it will bring us bye and bye. We give even now a value to the scattered bricks, beams, nails, clamps, etc., which bring us no use when in that condition, in consideration of the use they will afford us when put together at some future time in the shape of a house. We value the fermenting must, which, as such, we cannot make any use of, because we know that bye and bye it will be a serviceable wine. And so might we also value the unripe wine, which we know will become excellent wine, by the amount of use it will give us as matured wine. But, if we ascribe to it here and now a value corresponding to that future use, there remains no room for an increase of value, and for interest. And why should we not?" Böhm-Bawerk, *Capital and Interest*, p. 417.

goods according to the use — at least, we do not value them *only* according to the use — which they bring us at the moment, but also according to that use which they will bring us in the future." Why, then, should not the undertaker value the capital according to the use which it will "bring him in the future," and pay for it accordingly? Or, if commodities "ripen," how is the short-sightedness of the seller of the future goods accounted for? According to the view that "future goods universally have a less value," the dilemma — If there is no advantage in profit, why is capital produced? or, if there is an advantage in profit, why will the seller of capital regularly lose it? — can never be explained. The explanation lies in the fact that future goods are not universally of so much less "value" at the time of the exchange as to eliminate surplus "value." An exchange of present goods for a greater quantity of future goods may be made, in which the utility of the time spent by both parties in the production is exactly equal, or, stated according to the Austrian theory of value, the marginal utility of the goods would correspond to the rates of exchange as indicated by the values along the line TT in the diagram, but the utility of most of the future goods might be about the same to the party receiving them as the utility of present goods, so that the surplus utility realized in the satisfaction of want would nearly correspond to the concrete surplus in the greater quantity of future goods received over the quantity of present goods delivered, and which might have a very manifest representation in terms of interest payment, as represented by the values in the diagram along the line OF. On the other hand, the difference between the utility of most of the present goods to the party receiving them and the utility of the future goods paid for them might be much greater than is indicated by the values along the line TT; but the surplus utility thus realized in the satisfaction of wants would have just the reverse of a concrete

representation in the relative quantities of goods received and delivered, as indicated in the diagram by the values along the line OP. In exchange, each individual sacrifices future goods for present goods and present goods for future goods in the virtual apportionment of his time in production, just as in solitary production he actually apportions his time between the actual production of present goods and the virtual production of future goods by the actual production of capital. The actual result in the kind of goods consumed is relatively the same in both cases; but in exchange the sacrifice is an actual surrender of the one kind of goods for the other, while in solitary production there is only a nominal sacrifice of an alternative product. Referring to the diagram, it will be seen that, regarding the total average or the marginal values along the line TT only, there is no surplus "value"; but, regarding the bulk of the capital consumed, there is a surplus "value" nearly corresponding to the surplus product, and, regarding the bulk of the present goods consumed, there is a surplus "value," which, however, from the nature of the case, can have no concrete representation in quantities of goods. Capital is produced because it yields a net return in "subjective value" as well as in quantity of goods for a portion of the time available for production; and the relative length of this portion of time to the whole time depends principally upon the fortune of the producer. On the other hand, the seller of the capital, or future goods, can afford to lose what, under other circumstances, might be surplus "value," because, in the devotion of a portion of his time to the production indirectly of present goods, he realizes a much greater "subjective value" than he could derive from the greater quantity of future goods he finally pays for them.

In actual industrial practice the surplus product that the capitalist can realize if he consumes his capital himself in production is generally a very large negative quantity,

so that profit or interest usually consists entirely of the capitalist's share of the loanage. The upper limit, therefore, to the quantity of interest or profit which the capitalist can receive, is fixed by the surplus product yielded by the consumption of the capital by the proletaire; and the lower limit is zero, the point at which the capitalist would cease to accumulate capital. Between these two limits the quantity of profit or interest that is realized in practice depends, in general, upon the number of proletaires available for the consumption of the capital relative to the quantity of capital available for consumption. On account of diminishing returns the employment of a definite number of employees will correspond to a maximum profit for a given rate of wages, or the use of a definite quantity of capital will correspond to a point of maximum earnings for any given rate of interest. But on account of competition among the employees, and among the employers, the rate of wages will finally be determined by just the number of employees available for employment in the consumption of the capital; or, on account of competition among the borrowers, and among the lenders, the rate of interest will finally be determined by just the quantity of capital available for consumption. The relative quantity of profit received by the employer is, therefore, fixed by the number of employees available for employment in the consumption of the capital; or the relative quantity of earnings received by the borrower is fixed by the quantity of capital available for consumption. The absolute quantity, however, both of profit and wages, and interest and earnings, depends, of course, aside from the nature of capital and men, upon the intensity of effort at which the producer believes he can realize the greatest utility of time, and the quantity of capital available for consumption.*

* If we let g represent the ratio of the total product to the number of producers, c represent the ratio of the quantity of available capital to the

The relations between the employer and the employee with regard to profit and wages may be illustrated by diagram 4 (see page 241). Let the distance of P from O along the line OP represent the number of employees available for the consumption of capital in production. Let the height of the point G in the line OG, vertically above the point P in the line OP, represent the total product of the number of employees represented by the distance OP, during their consumption of a given quantity of capital in such production. Then, for any increase in the number of employees consuming the given capital in production, there will be a corresponding increase in the total product; but, on account of diminishing returns, this product will not ncrease as fast in proportion as the number of employees consuming the capital. So the line OG will be concave towards the line OP. But this increase in product, corresponding to an increase in the number of employees, will be greater when the number of employees is small, compared with the quantity of capital consumed, than when the number of employees consuming the capital in production is relatively large. So the curvature of the line OG will gradually decrease as it proceeds from its origin at O. Now let the height of a point W in the line OW, vertically above the point P, represent the portion of the total product received by the corresponding number of employees as wages. In order that the utility of the time of each employee shall be equivalent, the average rate of wages must be the same, whatever be the number employed. So OW will be a straight line; and

number of proletaires, and a and b be constants, then the relations between these quantities might be expressed by a function having a form like $g = ac^{\frac{c}{c+b}}$. The rate of wages or earnings would then be $w = g\frac{b}{c+b}$ $(1-\frac{c}{c+b}\log_\epsilon c)$, and the rate of profit or interest would be $r = \frac{g}{c}\frac{c}{(c+b)}$ $(1+\frac{b}{c+b}\log_\epsilon c)$, for a maximum profit of the employer or earnings of the borrower.

the ratio of the height of PW to the length OP, or the angle OW makes with OP, will represent the average rate of wages each employee receives. Now the angle which a tangent TT touching the line OG at the point G makes with the line OP represents the increase in the quantity of product resulting from the employment of another employee when the number represented by the distance OP are already employed in the consumption of the capital. When this increase in product is greater than the quantity of wages that would be paid to the additional employee, represented by the angle made by TT and OP being greater than the angle made by OW and OP, then another employee could profitably be employed at the same rate of wages. But, when the decrease in product is less than the wages that would be saved by the employment of one less employee, represented by the angle made by TT and OP being less than the angle made by OW and OP, then, at the same rate of wages, it would be more profitable to employ a smaller number of employees. At a given rate of wages, then, a maximum profit, represented by the distance WG, will be realized when such a number of employees are employed that the increase or decrease in product resulting from the employment of one employee more or less is just equal to the increase or decrease in the quantity of the wages that would be paid, represented by P being taken at such a point that the tangent TT through the corresponding point G will be parallel to the line OW. Then in free competition among employees and among employers the average rate of wages for any given quantity of capital and number of employees will be in stable equilibrium at the point at which the quantity of wages paid or saved is equal to the increase or decrease in product that results from the employment of one employee more or less.

When the quantity of capital consumed by each em-

ployee is relatively small, the increase in the quantity of product resulting from the consumption of a given quantity of capital by more employees is more nearly proportional to the increase in the number of employees than it is to the increase in the quantity of capital; and the proportional part of the product (the ratio of PW to PG) going to the employees as wages is larger, although the rate of wages is lower than when the quantity of capital consumed by each employee is relatively large. So, when the quantity of capital increases faster than the number of employees, there will be an increase in the rate of wages; but the proportional part of the total product paid as wages will be less.

Within the limits in which an economical transaction may be afforded to both parties to an exchange, the point of division of the barterage is fixed by the equivalent utility of their time; but the utility of their time is itself governed by conditions which affect either their rate of production or their utility of property. One of these conditions is: anything that provides a monopoly which, in its effect upon the rate of exchange, is equivalent to an increase in the quantity of capital consumed in the production of the commodity. With regard to the production of any particular commodity the number of employees employed and the quantity of capital invested in the industry will tend to that point at which the utility of time of the employees and the rate of profit on the capital are equivalent to that of employees and capital engaged in other industries. A monopoly in the production of any commodity will allow the price to be raised to the limit of barterage if no other commodity with a higher utility of time for any quantity can be substituted. But between a high price, at which little of the commodity can be sold, and a low price there must be some price at which such a quantity can be sold that the profit above the wages that must be paid to the number of employees required to

produce that quantity will be a maximum. The change in the number of employees that can be profitably employed when an industry is monopolized may be illustrated in diagram 5 (see page 241). PG represents the product, and OP the number employed for a maximum profit under the condition of free competition. But, if the industry becomes monopolized, the form of the curve OG changes in the direction of OG_m. For the utility of time of employees to remain equivalent, the rate of wages in the monopolized industry will remain the same, provided the number discharged can find employment in some other industry at the same rate; and the number which can then profitably be retained in the industry will be represented in the diagram by the distance OP_m, which must be taken so that the tangent T_mT_m drawn through the point G_m is parallel to OW, in order that the profit represented by W_mG_m will be a maximum. The distribution of the discharged employees among other industries has the effect, however, of increasing the proportion of the number of employees to the quantity of available capital in these other industries, and, therefore, of decreasing the quantity of the product produced by the last additional employee consuming the capital, which must finally result in a reduction of the general rate of wages.

Within the limits in which an economical transaction for both parties may be afforded, the point of division of the loanage is fixed in free competition by the quantity of the product of the last consumer of the capital; but, in a similar manner to the case of exchange, anything which affects the quantity of the product of the last employee employed in the consumption of the capital will change the proportional division of the loanage. One of these things is a monopoly in a particular kind of employment. If an organization of employees raises the rate of wages, a smaller number must be employed in order to afford a maximum profit to the employer if the price of he

product remains the same. The total product will therefore be less, and the quantity of the product of the last employee greater; but each employer can add the increase in wages to the price of the product without fear of losing trade by competition, because, on account of the trade union, all the employers in the industry would have to pay the higher rate of wages; and, therefore, none of them could profitably increase their output to supply the trade of any other employer at a lower price than that represented by this higher rate of wages. Therefore, as in the case of the capitalist in the monopoly of the production of a commodity for exchange, the total quantity of the wages received by the smaller number of employees may be greater than the total quantity received by the greater number at the original rate. The trade union, therefore, though affording an increase in wages to the smaller number who are retained in the industry, either leads to a reduction in the general rate of wages of every one outside of it or causes many to be out of employment.

In the division of loanage between the employer and employee, we find the rate of wages at which the whole number of employees available can be employed, or the number that can be employed at a given rate of wages, which will afford a maximum profit for a given quantity of capital. This corresponds to that form of industry in which the possessor of the capital controls the industry and determines the number to be employed. If the conditions be reversed, and the consumer of the capital determines the quantity of capital to be consumed in production, in order that a maximum quantity of earnings may be realized, then, in the same manner as above, we find the rate of interest at which the whole quantity of capital available can be consumed, or the quantity that can be consumed at a given rate of interest. These relations between lender and borrower with regard to interest and

earnings may be illustrated by diagram 6 (see page 241). Let the distance of C from O along the line OC represent the quantity of capital consumed by a given number of borrowers in production. Let the height of the point G in the line OG, vertically above the point C in the line OC, represent the total product produced by the borrower during his consumption of this capital. On account of diminishing returns the line OG will be concave toward the line OC, the same as in the case of profit and wages. Let the height of a point I in the line OI, vertically above the point C, represent the portion of the total product that is paid as interest by the borrower of the capital. On account of the competition of capitalists in loaning capital the average rate of interest must be the same for all the capital loaned. So OI will be a straight line, and the ratio of the height CI to the length OC, or the angle OI makes with OC, will represent the average rate of interest on the capital. The angle which a tangent TT touching the line OG at the point G makes with the line OC, represents the increase in the quantity of product resulting from the consumption of another increment of capital while the quantity represented by the distance OC is being consumed. When this increase in product is greater than the quantity of interest that would be paid for the additional increment of capital, represented by the angle made by TT and OC being greater than the angle made by OI and OC, then another increment of capital could profitably be consumed at the same rate of interest. And, when the decrease in product is less than the interest that would be saved by the consumption of one less increment of capital, represented by the angle made by TT and OC being less than the angle made by OI and OC, then it would be more profitable to consume less capital at the same rate of interest. At a given rate of interest, then, a maximum earning, represented by the distance IG, will be realized when such a quantity of capital is

consumed that the increase or decrease in product resulting from the consumption of one increment of capital, more or less, is just equal to the increase or decrease in the quantity of interest that would be paid, represented by C being taken at such a point that the tangent TT through the corresponding point G will be parallel to the line OI. Then, in free competition among lenders and among borrowers, the average rate of interest for any given quantity of capital and number of borrowers will be in stable equilibrium at the point at which the quantity of interest paid or saved is equal to the increase or decrease in product that results from the employment of one increment of capital more or less.

The proportional division of the total product into interest and earnings is precisely similar to the division of the product into profit and wages, and corresponds in both cases to the increase in the total product due to the increase in the quantity of capital relative to the increase in the total product due to the increase in the number of the consumers of it. In order that the utility of the time of each consumer of capital in production shall be equivalent, the earnings of a borrower must be equal to the wages of an employee who is in the same economic condition with regard to fortune and skill as the borrower; and, to provide a uniform gain from investment, the rate of profit must be equal to the rate of interest. Therefore, the conditions in the two cases are identical. And, finally, in the case of exchange the division of the barterage is determined by the equivalence of the utility of time to the parties to the exchange; while in the case of a loan of capital the division of the loanage depends upon the conditions which will afford a maximum profit to the employer, or maximum earnings for the borrower.

With respect to monopoly the relations between borrower and lender with regard to earnings and interest are of precisely the same nature as the relations between

employer and employee with regard to profit and wages. If the borrower gets a monopoly of the industry in which he is engaged, the point of maximum earnings will correspond to a smaller quantity of borrowed capital at the same rate of interest, on account of the higher price he can get for a smaller quantity of product when no one else can produce it at the original rate. On the other hand, an organization of lenders may raise the rate of interest; and, as in the case of wages, the total quantity of interest derived from the smaller quantity of capital that can be loaned at the higher rate may be greater than the quantity of interest received from the larger quantity of capital loaned at the lower rate. The lender's monopoly, however, can only be of a temporary nature, unless the organization of lenders can control all the sources of the supply of capital.

When an industry is controlled by the capitalist, the product is distributed between the employer and the employee as profit and wages, the proportion going to each being determined by the conditions which will afford a maximum profit to the employer. On the other hand, when an industry is controlled by the consumer of the capital, the product is distributed between the lender and the borrower as interest and earnings, the proportion going to each being determined by the conditions which will afford maximum earnings to the borrower. The combination of a borrower and an employer in one person appears in the entrepreneur; and the maximum income of the entrepreneur, consisting of profit on the capital he may invest and earnings from the work he may perform with the use of the borrowed capital is determined by both the number of employees he employs at a given rate of wages and the quantity of capital he borrows at a given rate of interest.

In presenting this theory, I have conformed as far as possible to the conceptions in current usage. In the

treatment of economics the same expression is often applied to things essentially different because they are alike in some respects, and this has led to such unclearness of conception that the science of economics has not commanded that respect to which it should be entitled. For instance, that portion of the product of the proletaire which is due to the consumption of capital is generally treated as the "product of capital." Now it seems to me that the idea of production refers primarily to an act of conduct. The object of this conduct is the adaptation of the organism to environment, or, speaking in the terms of economics, the provision for the satisfaction of wants. This conduct involves an expenditure of effort, or, in physiological terms, the katabolism of tissue. But the rate at which the satisfaction of want takes place depends upon the environment, and the environment depends in part upon previous acts of conduct. Now, in so far as the quantity of product depends upon this environment (estimated quantitatively in terms of capital) as well as upon the effort involved in the act of conduct, the product may be said to result from, or be "produced" by, capital as well as the organism consuming the capital. But, since the particular state of the environment (estimated in terms of, or known as, capital) is the result, in part, of a previous act of production, that part of the result of the subsequent act which is called the "product of capital" might with much better reason be known as the result of the previous act of production which brought the capital into existence. But this use of the term would finally lead us back to an act of production in an environment unmodified by previous conduct, which is not a conception of very great practical value. It would seem, therefore, to be more in accordance with the methods of modern science to use the term "production" only in reference to one thing,— an act of conduct. To regard capital and an act of conduct as joint factors in produc-

tion leads to the unclearness of their being regarded as co-ordinate factors, involving similar conditions and bearing similar relations to the product, which is an obvious misconception. The only relation that capital can have to the product which "it produces" is that of physical cause and effect. In addition to the relation of physical cause and effect the organism bears a relation to the product with regard to the satisfaction of want and katabolism involved in the act of production. In the case of capital it may be said that it is the producer of the capital that is related to the final product with regard to satisfaction of want and pain involved in production; but this is not because capital is a co-ordinate "factor of production," but because the producer of the capital is virtually the producer of that portion of the actual product of the subsequent act of production which exceeds the product that could have been produced in the same time without the capital. So, even in this sense, the final product is in the end the result of an act of production. So it seems to be more conducive to exactness of expression to use the term "production" only in reference to an act of conduct, and product only as the result of an act of conduct, the quantity of which, however, depends upon conditions existing in the organism and conditions existing in the environment. If in electrical science it is worth while to give a distinctive name to a ratio according to the order in which it is read, it ought, at least, to be worth while in economic science to distinguish between an act of a conscious organism and the action of the environment of this organism.

According to the preceding development of the subject, profit is a reward of abstinence in the sense that, in the apportionment of time to the production of different things, any gain resulting from the expenditure of time in the production of one thing instead of another is a reward for abstaining from the production of the other

thing. By abstaining from the production of present goods, a profit is realized from the virtual production of future goods by the actual production of capital. Or, as it is generally stated, profit is realized by abstaining from the consumption of present goods and exchanging them for capital which is generally consumed by another party in production; and the reward appears as loanage in the form of profit or interest. Wages are not paid out of capital, but out of product which is partly due to the consumption of capital. Wages are paid out of capital only in the sense that the employer generally buys the product of the employee before he can sell it to his customers, and in this transaction he bears exactly the same relation to the employee that the wholesaler bears to the manufacturer with regard to the money he must advance for the purchase of goods before he can sell them to the retailer. The rate of wages depends upon the ratio of the number of available employees to the quantity of capital available, not because the capital is a fund to be divided among the employees, but because the employment of a certain number of employees at a given rate of wages in the consumption of a given quantity of capital will correspond to the point of maximum profit to the employer. A general rise in the rate of wages results from an increase in the rate of production, whether it be on account of an increase in the skill of employees or a change in the nature or quantity of the capital available for their consumption. In a single industry a rise in the rate of wages can, under free competition, be only temporary, depending upon the mobility of other employees seeking such employment as will afford them a maximum utility of time. An organization of employees that can control the rate of wages they receive may command a permanent increase in this rate, in the same manner that an organization of employers can command an increase in the price of a commodity when they can control its production.

When a monopoly is created by an organization of employees, the employer really acts only as an intermediary in turning over to the employees the monopoly price that has been made possible by their organization. A combination of employers that controls the raw materials entering into the product can control the monopoly price of the product independently of any action of a trade organization; but, if the employers have no monopoly of the raw materials, a combination of their employees can command the whole monopoly price without being compelled to share any part of it with the employer.

In addition to raising the price of a commodity to the consumers, a combination of employers may force at least a temporary reduction in the rate of wages they pay to their employees and in the price of the materials they purchase. The permanence of this reduction depends upon the mobility of the employees and of those who supply the materials in changing their employment and business. For a monopoly of any industry to have a permanent character, the combination of employers must be able to control the raw materials that enter into the product, or they must enter into a compact with a trade union covering the industry that, on account of the nature of the industry, is able to control the number of employees who can acquire a practical proficiency in it. In so far as they are really able to control the supply of labor, an employees' combination is superior to a combination of their employers, since the employee is the first in bringing the product into existence; but in practice an employees' combination can seldom have the character of a permanent monopoly, on account of the impossibility of controlling for any great length of time the supply of employees who may become proficient in any industry. The monopoly wages to be realized in an employees' combination will attract employees from other occupations, who will make themselves proficient in the industry affording the mo-

nopoly wages. The trade organization may endeavor to control these employees also; but, for the same reason that an employers' combination cannot continue indefinitely to buy out all the competitors attracted to an industry on account of the monopoly profit, so the trade organization of employees cannot indefinitely take care of all the employees attracted by the monopoly wages, except, perhaps, when it is able to force employers to employ only union men at union wages, and can control apprenticeships. The only monopolies, therefore, that can have a permanence independent of the mobility of employers and employees seeking such business and employment as will afford them a maximum utility of time are those which are created by special legal enactment or which can control the raw materials that constitute the substance of the finished products. But, although this is the case, the gains made possible by temporary monopoly are none the less real.

A combination may establish a monopoly price for its products; and, although the monopoly may be only temporary, this price, for the time being, may be sustained as in the case of a permanent monopoly, since in practical industry a considerable time is required for an outsider to develop the facilities for commanding any considerable share of the monopoly gains. And, even when the combination is obliged to restore the original price on account of such threatened competition, the monopoly may be re-established as often as conditions are again relatively the same as when the monopoly was created. With regard to the consumer the economic status of a temporary monopoly is, for all practical purposes, the same as that of a permanent monopoly. When a combination of employers has reduced the price of raw materials, those who supply them to the combination can shift, to a great extent, the loss caused by a forced reduction in the price of materials on to their own employees, in the same way

that the employer can shift the increase in wages demanded by a trade-union monopoly on to the consumer o the commodity. Just as an increase in the price of a product caused by monopoly can be shifted by each one who handles the product so as to affect only the last buyer, so a reduction in the price of a product caused by a combination of buyers can be shifted by each one who handles the product, so as to affect only the first one that sells it. Finally, when all the different interests in all industries are controlled by close combinations,— the consumers, the employers, the employees, both in the case of the raw materials and the finished products,— then the conditions which govern the price of products come again to be very similar to what they were in the case of free competition in all of these interests. Both in the case of free competition and of combination in all interests the rate of exchange of products is governed by equivalent utility of time, since under free competition the competitor may undersell those who may be realizing an exceptional utility of time, and, in the case of combination, a monopoly price will attract more to the industry, so that the total proceeds realized by the combination must be divided among a greater number, and, eventually, the price that will afford an equal utility of time must be restored.

The advantages to be gained by combination are realized in the greatest degree by those interests that are first in the field in the general development towards combination, since, if all industries were controlled by combinations, each individual would lose as much by the higher price, so to speak, of any product he might purchase as he would gain from the higher price of any product he might sell. These advantages are gained, and are only possible, at the expense of those whose conditions are such as do not readily admit of combination, as in the case of consumers, and of those whose employment is of an irregular character, or in a scattered industry, like farming. Although

all industries might finally be controlled by combinations affording permanent advantages with regard to economy in production, the combinations having control of raw materials can also command a monopoly price which is only occasionally possible to combinations that have not this advantage. Under present industrial conditions we have industrial combinations deriving a gain from permanent augmentations in rate of production and temporary monopoly prices; and we also have permanent monopolies in the supply of raw materials, deriving a gain both from permanent augmentations in rate of production and permanent monopoly prices. The competition among capitalists seeking opportunities for the investment of great accumulations of new capital will prevent a monopoly price from being permanently commanded by any combination that cannot permanently control the sources of supply of the materials that enter into the product. The only permanent gains possible to such combinations are those that result from economies in production, which, however, do not affect the price of the product so long as any other competitors cannot produce under similar advantageous conditions. On account of the quantity of capital available for investment increasing faster than the number of those who can consume it in production, the rate of profit or interest gradually falls; but the total quantity of profit and interest received from the investments increases, and in the division of the total product the proportional share received by the capitalist becomes relatively greater. At the same time the rate of earnings or wages, and also the quantity of earnings or wages, received by the borrower or employee, becomes greater, although the proportional share of the total product received by the borrower or employee becomes relatively less. So with regard to their future the employees and the borrowers are better off, as well as the capitalists, when the latter reinvest their interest and profit in industrial

enterprises, than if the interest and profit was distributed among the borrowers and employees, and consumed by them in present satisfactions.

The foregoing is a very brief study of some of the relations in organic life that pertain to welfare. But in a modified form, without the use of mathematical analysis, and in language conforming more to current usage, this sketch presents the substance of the more important parts of the development of the Science of Welfare. In an exhaustive development of the science these relations are more fully shown and classified in detail, and the relations obtaining in the future period during the consumption of capital are considered from the standpoint of the future time also. The method of treatment consists simply in examining with precision and developing systematically the relations necessarily involved and subsisting in the materials of the subject,—organisms and environment. The fundamental terms and concepts are derived and adapted from those in familiar use in the related biological sciences. In its development the theory follows a course comparable with that of organic evolution, and is suggestive of the concurrent economic evolution. It thus provides a rehabilitation of economic science along the lines of modern evolutionary thought. Based upon the undisputed facts of organic life and the obvious relations of organisms to environment, the body of the theory is stated in an uninterrupted series of closely related equations in strictly logical sequence. By the development of the conception of the utility of time an adequate and satisfactory explanation of all the real issues of economics is provided, the commensurability of effort and reward is found in the metabolism of organic life, a rational explanation of exchange is provided without bringing into the problem such non-emerging quantities as the utility to the merchant of the goods he sells and the cost of pro-

duction of the goods he buys, and a complete reconciliation of the classical and Austrian schools is shown. The examination of every element that enters into the problem, with a view to the final determination of its bearing upon the welfare of the organism and the universal use of the conception of the utility of time, enables a very closely interrelated and unified theory to be developed, which permits of an even more elegant mathematical treatment than that of the physical sciences.

Partial Synopsis of the Science of Welfare.

1. In any act of conduct of any organism the utility of the time spent in the act depends upon katabolism and environment.

2. Since, in estimating utility of time, the katabolism, or pain, is subtracted from the anabolism, or pleasure, it may be assumed that the intensity of the effort has such a value that the utility of time is always a maximum.

3. The utility of time is the product of the rate of production of goods and the utility of goods, or the product of the rate of production of capital, the yield of capital, and the utility of goods.

4. For the realization of a maximum welfare from the time apportioned to the production of different kinds of goods, the utility of time in the production of the last increment of each kind of goods must be the same. Therefore, the rate of production of the last increment of any two kinds of goods must then be inversely proportional to their utility.

5. Since the rate of production of goods depends upon the capital and skill possessed, and the utility of goods depends upon the fortune already available for consumption at the same time, the relative utilities of the time of different individuals in the production of different commodities will depend upon their relative capital, skill, and

fortune. So that the utilities of time of two individuals in the production of two different commodities may be said to be equivalent when their inequality in utility of time just corresponds to their inequality in the amount of capital, skill, and fortune they possess.

6. For each individual to remain permanently in that occupation which will afford him a maximum utility of time, the rate of exchange between commodities must be such that the utilities of time of all shall be equivalent.

7. In order that a maximum welfare shall be afforded in the consumption of different commodities, their average rate of production must be inversely proportional to their average utilities, so that the general rate of exchange of two commodities must be proportional to their average rates of production or inversely proportional to their average utilities.

8. The difference between the utility of time in the indirect production of a commodity by means of exchange and the utility of time in the direct production of the same commodity is the barterage gain due to the substitution of the indirect for the direct method of production.

9. Case 1. A maximum welfare is afforded by the apportionment of time between the production of present goods and the production of capital in precisely the same manner as a maximum welfare is afforded in the production of goods of different kinds.

10. Case 2. A barterage gain is afforded by the exchange of present goods and capital in precisely the same manner as in the exchange of goods of different kinds.

11. Case 3. A loanage gain afforded by the exchange of future goods and capital is distributed between the producer and consumer of the capital according to relations between the quantity of capital and number of consumers with regard to the rate of production of goods.

12. Case 4. Both a barterage gain and a loanage gain

may be afforded by the exchange of future goods and present goods, and these gains and their distribution are determined in the same manner as in the simple cases 2 and 3.

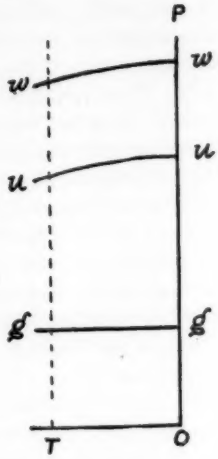
13. When capital is borrowed at a constant rate of interest or when employees are employed at a constant rate of wages and there is an increase in the quantity of the product resulting from the employment of each succeeding increment in the quantity of capital or an increase in the number of workmen, then for a given rate of interest or wages there will be a definite quantity of capital or number of employees to correspond to a maximum difference between the total quantity of product and the quantity paid as interest for the capital or as wages to the employees.

14. *A.* When the number of consumers of the capital is controlled by its possessor, the distribution of the loanage between consumer and possessor is determined by the rate of wages which corresponds to that number of consumers affording a maximum income, at that rate of wages, to the possessor of the capital.

15. *B.* When the quantity of capital borrowed is controlled by the consumer, the distribution of the loanage between the consumer and possessor is determined by the rate of interest which corresponds to that quantity of capital affording a maximum income, at that rate of interest, to the consumer of the capital.

FREDERICK KELLOGG BLUE.

DIAGRAM 1.



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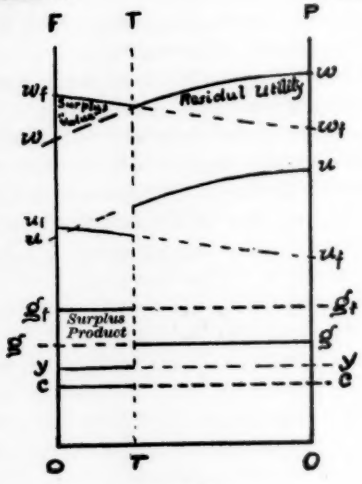

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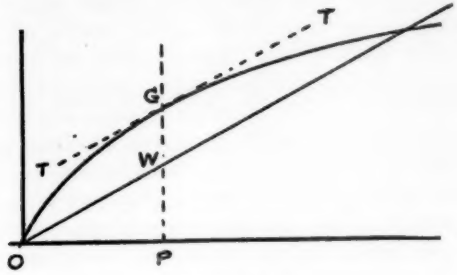

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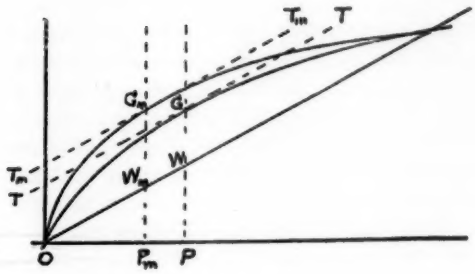

DIAGRAM 5.

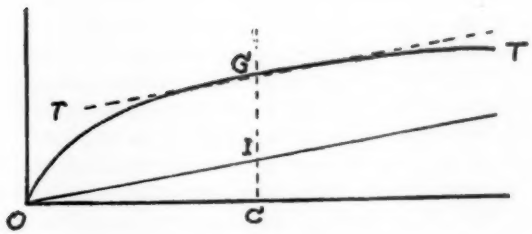

DIAGRAM 6.

BRANCH BANKING IN THE UNITED STATES.

UPON few subjects has the consensus of opinion of both economists and financial writers been more general than upon the advantages of branch banking over a system of separate local banks. Its superiority in respect to safety, economy, the equalization of rates for loans, and the diffusion of banking facilities, cannot be questioned. The system is common to all commercial countries, with the exception of the United States; and it has been the settled conviction of writers to whom experience and knowledge of banking give authority that its prohibition in the national banking law and in that of most of the States is a serious defect, and that these advantages would follow the adoption of the system in this country. The original causes of restriction and the arguments usually advanced against greater liberty will hardly bear the test of impartial examination. Prejudices aroused in the course of Jackson's war against the Second Bank of the United States; a somewhat absurd fear of an impossible monopoly in banking; and the self-regarding interests of local bankers,— have been, however unreasonable, effective obstacles to any change. Until very recently the probability of any modification of our banking laws in this direction has been remote. The discussion of branch banking has been almost entirely academic, useful in the exposition of banking principles and practice, but not earnestly desired by even a respectable minority of active bankers, whose operations, we may conclude, have not been hampered in any serious manner. Branch banking has now found active support both among leading bankers and in Congress. In several of the numerous measures which have been brought forward to secure a more elastic note

issue, branch banking has been authorized, though, it should be added, always as a matter of secondary importance. The subject seems now to have entered the stage of practical politics, and its consideration with particular reference to existing economic conditions and banking methods in the United States deserves careful attention. Accepting at the outset the advantages of branch banking already mentioned, it will be the purpose of this paper to estimate the value of these gains and to consider certain disadvantages which may be expected to follow from the adoption of the system at the present time in the United States.

The superiority in safety of branch banking rests upon three considerations of very general validity,— superior ability of management, wider area of risks, and greater effectiveness of reserves. The first point of superiority requires no comment. The second depends upon generally recognized insurance principles. The larger the number of individual borrowers, the smaller is the likelihood in general of serious loss from their failure to meet obligations. The danger of heavy losses at any one time is further reduced if the bank is engaged in business over a wide geographical area, with loans based upon more kinds of business than is possible to local banks, except in large centres of population. The explanation of the greater effectiveness of reserves is closely analogous. A bank must actually hold or be able to get at all times enough money to meet any demands which, upon the most conservative estimate, are likely to be made upon it. The larger the number of depositors and the more varied their business, the less likely are these demands to come at any one time. Such demands vary with the season of the year, both in different trades and in different sections of the country. At any given time the deposits of one group of individuals or in one section of the country will be increasing, while those of another group or section will

be drawn down. The bank with many branches can concentrate its reserve wherever the demand arises. In a measure this is true in the United States at present, under the system of bankers' deposits in reserve cities; but the transfer of cash would be more immediate and automatic under a branch system. Moreover, the existing system is exceedingly unsatisfactory during periods of acute distress. It is possible for the banks of a city to unite upon some common policy to allay a panic; but experience shows that at such times country banks withdraw deposits to protect themselves, even when they are in no immediate danger. The credit structure as a whole is weakened, reserves become unavailable at points of greatest danger, and banks fail which might have survived with a little timely assistance.*

The greater efficiency of reserves may result not only in greater safety, but also in an important economy in the cost of banking facilities, since upon the same amount of cash as a basis a much larger structure of credit may be safely reared under the branch banking system. In Canada, cash holdings normally run between 7 and 8 per cent. of demand liabilities, while in the United States the proportion is in the neighborhood of 15 per cent.† The economy of the branch system is indirectly brought out if we assume that the law prohibited the deposit of reserves, even though there were no legal requirement of

* This statement should not be taken too absolutely. The relation between country banks and their city correspondents is often very close. The aid to the former through taking over of loans by means of rediscounts is not inconsiderable, while out-of-town banks often relieve the pressure upon city banks by lending directly in the financial centres.

† The Canadian banks are, in a sense, an outlying dependency of the New York money market. They lend money at call there, and withdraw funds whenever their home demands or foreign exchange payments bring about an extraordinary demand upon them for funds. Their reserves should perhaps more properly be compared with those of our banks outside of central reserve cities, which in September, 1901, held a cash reserve of about 10 per cent.; but their deposited reserves in central reserve cities were vastly greater than the net deposits of the Canadian banks in other banks.

amount. Under such circumstances the city banks, being without bankers' deposits, might with as great a degree of safety as at present hold a smaller reserve with the same total of demand liabilities; but, clearly, the country banks, if each stood absolutely alone, would require much more money to secure the existing degree of safety than would thereby be released. Another source of economy comes through a smaller expense of management. Much can be saved in banking, as in any other occupation, when the business is carried on upon a large scale. Particularly great is the saving in this direction in the case of small branches as compared with the very small bank, and this renders possible the extension of banking facilities to places where the amount of business would be altogether too small for an independent bank.

These economies under competitive conditions would doubtless result in lower rates for loans, not so much in the reserve cities, where the accumulation of bankers' deposits gives great advantages to the borrower, as in the smaller cities and in the country generally, where the large city banks would probably extend a network of branches. Even more important than lower rates is the equalization of rates which would be brought about, not so much through the economy of branch banking as by the greater mobility of capital. At present banking capital throughout the country, as shown by the ownership of bank shares, is very largely local capital. Dividends of banks in the Western and Southern States are considerably greater than those of banks in the East, but capital does not flow thither for banking purposes.* Under branch banking the mobility of capital is almost perfect, while with the local banks its immobility is at the maximum. The investment of capital at a distance in small banks clearly involves great risk and also not a little trouble, because each single investment must be for a very

*See Comptroller's Report, 1901, vol. i. pp. 454–456.

small sum. Under branch banking, capital in unlimited amounts would seek the region of high rates, thus increasing loanable funds and reducing rates. The absolute equalization of rates would not follow throughout the country. Money rates are certain to be lower in the great financial centres than elsewhere. Rates are indeed uniform in Scotland; but, from a banking point of view, Scotland is provincial to London. In Canada, rates do not vary much more than 1 per cent. between different parts of the country; but even that degree of uniformity is not to be expected in the United States. Until banks can extend credit in the form of notes as cheaply as in the form of deposit accounts, those parts of the country in which business requires some form of money which passes readily from hand to hand will always involve their banks in greater expense for the same amount of accommodation. Moreover, differences in economic conditions between various parts of the country are always a factor to be reckoned with. Business is generally subject to greater risks in the newer parts of the country than in those more fully settled. Both people and conditions are more speculative, and the general debtor character of such communities is an influence in the same direction. The widespread prosperity of the last few years has placed the agricultural States of the West in a much better financial position, which is already reflected in a lower level of rates for loans; but it cannot be expected, under any system, that there should be as great an equalization of rates in the United States as in Canada, and certainly not so much as in small and relatively stable European countries. When all qualifications have been made, however, the reduction should be considerable and of great economic importance.

The advantages of branch banking have been but briefly outlined, since they are so evident as to require little proof, and are worked out in great detail in

general banking literature.* These advantages are unquestionably real, and not to be wisely foregone, except for strong reasons. It is possible, however, to exaggerate their importance, and to overlook other consequences which may follow the establishment of branch banks not so satisfactory in their results. Some improvement in safety and lower rates may be secured at too great cost, and it may be feared that the enterprise which the local banks have shown and the aid which they have given in the general development of the country will be diminished. This is a matter difficult of proof in the absence of recent actual experience of branch banking in this country. The consideration of the subject with reference to special conditions in the United States must be largely hypothetical, based upon an analysis of the operations of the local banks with reference to certain characteristic features of the economic development of the country.

Under an ideal system the banker is solely and exclusively a banker. He has no greater interest in one industry or class of investments than in another. It is his function to lend money and credit, by means of which those actively engaged in industry can meet the fluctuating demands made upon them. With his own and the temporarily idle capital of others he makes advances to supply temporary requirements for capital. This rigid practice is nowhere followed absolutely, nor is it possible that it should be; but there is a wide difference in this respect between different banks in the same community and between different communities. In England this conception of the function of bankers seems to be more strictly adhered to than elsewhere, certainly more than in other European countries, if we except the reserve banks of issue under government influence.

In the United States, aside from a few of the city

* See *Sound Currency*, vol. vi., No. 1, "Branch Banking and Discount Rates," R. M. Breckenridge, and especially a bibliographical note, p. 2.

banks and some of those which are owned and controlled by one person, a very different condition has prevailed. The banks have not been large enough to be the most important financial interest of those who own and control them or to overshadow through the amount or mass of business the particular individual interests of directors. Leaving out of consideration for the moment the banks of the large cities, what we may call the typical American bank can be roughly characterized in the following manner. With a capital of from $25,000 to $300,000, it will be engaged in business as indicated by loans and discounts to an amount seldom exceeding $1,000,000. In respect both to capital and business the amount varies primarily with the population of the town where the bank is situated, and in a lesser degree with the section of the country.* The ownership of these banks is, as has been observed, almost entirely in local hands. Controlling ownership is not infrequently in the hands of a single person or group of persons closely united in other business relationships. There are indeed banks that are little more than adjuncts of some manufacturing corporations; though they may be regarded as exceptions. Examination of the *personnel* of the boards of directors will generally show that the bank or banks in any town include a large proportion of the most successful men engaged in its various occupations. In agricultural sections the directors are the leading merchants and a number of the more prosperous farmers, while in the East the place of the farmer is generally taken by men engaged in the manufactures carried on in the locality. The danger that the fortunes of the bank may be too closely bound up with a single industry or too closely connected with the affairs of the directors is very great, and has been the cause of

* In 1901 there were in Vermont 47 national banks, with an average capital of $137,000; while the 118 national banks of Kansas had an average capital of $71,000. There were 10 banks in Vermont with a capital of at least $200,000, and but 4 banks in Kansas.

many failures; it is one of the unavoidable weaknesses of the small local bank, and might seem to be another reason for the branch system. On other grounds, however, we may find reason to believe that the principal advantage of the separate local bank is found, if anywhere, in the local position and interests of those in control. A directorate so composed has the advantage of extensive local knowledge and of very intimate acquaintance with the individual borrower. The importance of this knowledge is vastly greater in the country than in large cities, because the loans actually made are not so liquid in their nature, and because many more loans are made in which the personal element is the determining factor. In any bank there are wide differences in the nature of the securities upon which loans are made, and also between banks in large cities and elsewhere in the relative importance of the different kinds of securities. Outside of large cities, banks make few loans based upon approved stock exchange securities, in relation to which the personal standing of the borrower is of little or no importance. In the country, on the contrary, a very large proportion of the loans are based upon the judgment formed by the directors of the character and ability of the borrower and upon the probable success of particular business ventures. These loans clearly involve great risk, and from the standpoint of safety alone might better be avoided; but their importance and value, in the economic development of the country, is very great. Without them the course of development would go on much more smoothly, with fewer ups and downs, but also, it may be believed, less rapidly. The risk of such loans, always great, must be vastly increased where the manager of the bank is not in possession of the fullest local information. Under a system of branch banks that risk would be greatly increased, and the resulting loss would be so serious as to require much greater conserva-

tism. Herein is to be found the most fundamental problem to be settled in any adequate discussion of the advantages of branch banks in comparison with local banks.

The reasons for the necessity of greater conservatism under the branch banking system appear on the surface. The branch must be in the hands of a local manager, who may be either a person born and bred in the place, or a member of the staff of managers of the bank, moving from one branch to another until he reaches the level suited to his abilities. The former is more likely to be the case of a branch which has taken the place of a recently absorbed local bank, since as many as possible of those formerly connected with the independent bank are naturally retained, among other reasons, because it renders more easy the negotiation of absorption. In the case of a long-established branch, it is more likely to be managed by one of the staff of managers sent from the central office or some other branch. He will be aided by a local adviser, if we may assume that the Canadian custom will be followed. In this way the personal knowledge of the directorate of the local bank is in some degree combined with general experience supplied by the manager, but seldom will the personal knowledge at the branch equal that at the small bank. The burden of responsibility will rest upon the manager, who, if able and energetic, will almost certainly not remain permanently. This will be particularly true of the small branches, which will be used as a good field in which the younger managers may gain experience. The manager will always be kept in close touch with the central office, all matters of importance being referred to it for approval. However earnestly the policy of the bank may be to encourage initiative on the part of the branch agents, the forces requiring conservative action on their part will always be too strong to be overcome. Between the enterprising

manager, desirous of making a good showing for his branch and reputation for himself through the reckless increase of business, which will lead to heavy losses, and the manager who is temperamentally unable to take any initiative at all, the bank will endeavor to find a mean, which will be secured by regulations covering the dealings of the manager and the reference of important matters to the home office. Clearly, the rigidity of the system must increase with the geographical area covered by the banks and the variety of conditions and industries with which its business is related. Again, the necessity for careful control will be much greater in a country of rapidly changing conditions, where speculation on account of the possibility of high returns from success is general. In all these respects the United States presents a more difficult field for the successful operation of branches than almost any other country in the world. Considerations which in a country of more stable conditions might be overlooked, here take a position of the first importance. Even in Scotland, whose banking system has been almost universally accepted as that best worth imitating, and where general conditions would seem to be most suited for branch banking, some of these natural effects of branch banking have been observed by a well-known writer: —

> The agent is merely the hand of the head office, put out or drawn back as directed. This system tends to preserve soundness in the business; but it curtails it, and dwarfs the banking experience of the staffs. Of course, in the large towns the agents require to have a little more latitude; but they are apt to find that with more latitude they may get out of their bearings, and be required to make their own reckoning. A Scottish agent usually finds that his best plan is to keep within the letter of his instructions, and never to ta l sonal responsibilities. The business of the bank may be stunted in the locality, but the head office will have all the more money to finance with; and the agent acquires a reputation for careful management. This state of matters is a constant source of discontent among traders in the provinces; but any material alteration of i is

improbable. It is the inevitable result of the centralizing process which has been in operation for many years past.

Self-preservation makes them [the agents] cautious in giving advances. Indeed, applicants for accommodation, especially when the amount involved is considerable, sometimes find head offices or private bankers more ready to entertain their proposals than branch offices. This is not, however, so much owing to the action of agents as to the fact that principals are naturally more diffident in matters brought before them through the medium of representatives than they are in direct communications. This fact is often adduced as an argument against the branch system of banking as compared with a multiplicity of banks. But it must be recollected that the former principle has the advantage in the all-important elements of solidity and the economy of capital.*

The probable effect, then, of the adoption of branch banking would be to reduce rates for loans upon the very best security, while it would seem probable that many borrowers would fail to get accommodation at all.

The latter part of this conclusion requires further illustration and proof, since criticism similar to that just quoted is not frequently heard from writers or from those engaged in active business in foreign countries.

Too much significance should not be attached to the absence of complaints in foreign countries of the workings of the branch banking system. Few persons have had experience in banking in more than one country, except in the large financial centres, where none of the consequences of branch banking would ordinarily be felt. Satisfactory evidence can only come from persons who have engaged in active business in small places, both in the United States and in foreign countries.

The supposition that the two systems might continue together side by side is extremely improbable. In every country where the branch banking system prevails, the process of bank amalgamation has gone on very rapidly, particularly during the last twenty years; and no one can

*A. W. Kerr, *Scottish Banking during the Period of Published Accounts*, 1865-98, pp. 125-129.

doubt that in the United States the movement would be quite as swiftly executed as in any European country. The undoubted ability of the large banks with branches to lend on the best security at lower rates than the individual banks would be very certain to drive the latter from the field. Attempts to retain a foothold through the more hazardous loans alone would soon prove fatal to solvency. Private bankers and note brokers would perhaps take a more important position than at present. Borrowing at low rates from the large banks, they would serve as intermediaries between them and large numbers of borrowers. This seems to be a very common practice in France and other European countries.* The borrower who has the best security, it will be agreed, is deserving of some consideration; and a system which lays a burden upon him to make possible loans involving a greater risk may seem to be unfair. This injustice is in part, at any rate, more apparent than real, since comparatively few borrowers are able to furnish equally good security for all their loans, and many large borrowers of high financial standing throughout the country secure loans in New York and other centres of cheap money. In the East the establishment of branch banking would certainly lead to fewer changes than in other parts of the country. In the West, where banking is well diffused at present, the advantages would be comparatively slight in many directions, though the changes in the character of the loans made by the banks would probably be great. In the South, which suffers most from lack of banking facilities, the advantages would be greater, though that region does not seem to require greater commercial banking facilities so much as the introduction of mortgage banks and co-operative credit associations of a quasi-philanthropic character, such as the people's banks so common on the continent of Europe.

* Courcelle-Seneuil, *Opérations de Banque*, p. 321.

The number of failures of small local banks has been often commented upon in discussions of this subject. Statistics have been often compiled showing the number of failures of small banks in the United States, and in comparison with most other countries the number of failures is certainly excessive. Without doubt the number would have been less under a branch bank system, and probably the total loss would have been less; but under any system failures and losses would have been greater in the United States than in countries whose conditions are more stable, and where accordingly there is less scope for and less temptation to engage in speculative transactions. In Scotland with local banks we may be quite sure that the number of failures would have been distinctly less than in the United States. Moreover, the number of failures in this country under the existing system may be expected to diminish as the entire country approaches more nearly the settled conditions of the older States. Of the 234 failures of national banks between 1892 and 1901, 30 took place in the eleven North Atlantic States, while there were 20 in the State of Texas alone. That unsound banking is not prevented by branch banking alone is illustrated by the experience of Australia, where a long period of land speculation, fostered by the banks, culminated in 1893 with the failure of 14 out of 26 banks holding more than half of the total banking deposits of the entire continent. In Canada, also, down to 1893, losses were quite as great as under the national banking system, although since that time the advantage has been distinctly in favor of the Canadian banks.

In the discussion of failures, attention should not be confined exclusively to the relative amount of losses under the two systems. Questions relating to money and banking have been almost continuously matters of political and social agitation in the United States. The

underlying cause of this exceptional division of opinion has been the position of large sections of the country as debtor communities. A narrow region of the country, slowly widening westward, has presented the normal social relationship of debtors and creditors living side by side. A very large part of the country has constantly presented the phenomena of an active people possessing little capital, with rich resources, which, however, have been too unlimited in amount to be very satisfactory as a commercial asset. In the attempt to develop these resources they have borrowed from a distance, not necessarily too much for the most rapid development, but so much as to bring upon them certain difficulties and discomforts. Periods of active speculation have been followed by periods of acute depression, marked among other ways by the disappearance of so much money to meet payments at a distance as to occasion a more or less chronic condition of scarcity of a circulating medium for every-day purposes. This geographical separation of debtor and creditor has been the cause of much agitation for cheap money, and also of the ill feeling and distrust with which Eastern moneyed institutions have been regarded. The area of the country in which this one-sided relationship exists is rapidly growing smaller, and the feelings which it occasioned are slowly dying away. It is difficult to imagine anything which will more certainly arouse them to full vigor than the failure of one or more large banks with a network of widely scattered branches. Under our present system a number of banks may fail at about the same time in different parts of the country, and the effect of each failure remains localized. In the case, however, of the failure of a large bank with branches in different parts of the country, the failure is much more dramatic and is long remembered. The failure of the City of Glasgow Bank in 1878 is a familiar story to all Scotchmen, and

even the failure of the Western Bank of Scotland in 1857 is not forgotten. When a local bank fails, the causes of failure, even though not understood in detail, can be ascribed to the dishonesty, negligence, or incompetence of some one or more persons well known in the vicinity,—always a very satisfying thing to do. Under the system of branches the causes of failure are remote to many of the sufferers and localities concerned; and if we assume the failure to be the result of the operations of the bank at its central office in a large city, as has usually been the case in other countries, little imagination is required to foresee the consequence in its effect upon public opinion.

This danger takes a very serious aspect when we consider the nature of the ownership of some of our most important banks. The last few years have witnessed the growth in all our leading cities of banks possessed of large capital and engaged in business of far greater magnitude than any banks which we have had in the past, the Second Bank of the United States alone excepted. These banks have been the natural outgrowth of the requirement for banks capable of handling easily very large financial transactions. The movement in favor of branch banking among bankers comes largely from those who have formed these large banks. In the absence of that liberty, control and ownership by groups of capitalists of several banks in the same city, and in a few instances in different cities, has taken place, and is certain to go further. This movement is a natural consequence of the concentration of business of a banking nature in our largest cities, and particularly in New York, following the many industrial combinations of the last few years. It is said that these large combinations resort to banks less for current commercial needs than did the separate establishments of which they are composed. The amount of business in the aggregate brought to New York has grown very rapidly

since all the financial transactions of the combinations are concentrated there, while the demands upon banks in those places where production is actually carried on have not increased in the same proportion. Under a branch bank system this transfer of business would have taken place easily and would hardly have been noticed. In the absence of branch banking there has been a notable growth in the lending of out-of-town banks in the leading financial centres, only partially, and rather irregularly, meeting this demand. So much may be suggested in explanation of the recent growth of interest in the subject of branch banking. In itself it does not offer a reason for or against the system.

The entire subject, however, is brought into touch with this discussion when one considers the nature of the ownership and control of many of the largest of our city banks. In outlining the general character of American banks, those in the monetary centres were left out of view. They have held in the past a position somewhat more independent of particular industries and personal interests than the generality of banks. There is reason to suppose, however, that this is less true now than it was twenty-five years ago, and particularly in the case of some of the largest and, it may be added, best managed banks. With the growth of large corporate enterprises and the control (even more than the ownership) of wealth in a few hands, the control of even the largest of banks has become desirable, not as a chief source of income, but as a convenience in connection with other enterprises. It is not intended to condemn this situation. It would seem to be a natural development of the general railroad and industrial methods which prevail in this country. But these conditions weaken the application to the United States of conclusions drawn from the working of branch banking in other countries. It is quite possible that, just as there are now some large banks controlled by purely banking interests, the

same would be true of banks under the branch system. Recent experience, however, gives reason to suppose that the other group of banks would be more active in extending their operations throughout the country. The same drastic methods which have been successful in bringing about combinations in the industrial world would doubtless appear in banking, and it may be questioned whether such rough-and-ready methods would not be more dangerous and harmful in banking than to railroads or industries generally. The likelihood of a rapid and peaceful transformation from local banks to branch banking is, in the existing state of opinion among the vast majority of small bankers, very remote. Amalgamation and absorption could probably not be brought about except under the pressure of competition of the most rigorous sort. The period of transition might well therefore be one of difficulty and uncertainty; but in the long run, notwithstanding difference in ownership, it is not improbable that there would be little difference in the policy and methods of the banks of this and other countries. The management of these large banks, however owned, may be assumed to be too far-seeing and intelligent to fail to give all customers, whether in the large cities or in the country, every possible facility. The danger that such a bank will lock up its funds in those large enterprises in which its managers and owners are primarily interested may be easily exaggerated. The larger the institution, the more it has at stake, and the more it has to gain from a uniformly careful regard for regular business dealings. The interests of the general mass of customers of the banks would probably be cared for, even at the expense of some dealings of the larger sort which might have been entered upon at the central office. The more reckless financiers do not often appear on the boards of directors of the large banks. When all is said, however, it must be concluded that at the present time, while we

are going through a process of industrial reorganization, and until the results of this transformation shall have been tested by time, it is hardly wise to intrust the reorganization of our banking system to the same group of influences.

The advantages of branch banking are incontestable; and the arguments urged against the system are after all, in large part, dependent upon temporary conditions and feelings. Under such circumstances a single step in the desired direction is to be preferred, both because more likely to be permanent and because it gives a basis of actual experience for further legislation. In a country so large and with so diversified conditions as the United States it may be questioned whether unlimited branch banking will ever prove satisfactory. No area of the same extent and diversity of condition is at present occupied by a system of branch banks. Liberty to open branches in the same county or in the same State would give a wide field for the application of the system over a field neither so varied in conditions nor so wide in extent as to excite the fears aroused by the proposal of branches for the country as a whole. The consequences of failure would be less serious if confined to a single State, since the vague fear and distrust of the money centres seems to grow directly with increasing distance. There would clearly be a great difference in results between different States. In States in which there are large cities, such as New York and Illinois, the large city banks would probably extend branches throughout the area opened to them. In purely agricultural States, like the Dakotas, no such large institutions could be created, though the territory covered by their branches might be as inclusive. In all the States, however, there would be room for the growth of banks respectable in size, and able to secure expert management and efficient directors. The absence of uniformity has never been a serious matter among English-speak-

ing peoples, and it may be added that these differences between the banks in different States would be no greater than their economic and social differences. Again, in the large cities perfect freedom in establishing branches might be of much advantage. The business relations of the large cities with each other are very close, while those of the smaller cities and of the country are usually centred in the nearest large city. In cities of the largest size the appearance of such competition would probably not be seriously disturbing to existing banks. Such a plan would facilitate payments and business of the largest sort which are concentrated in and between the large cities, and resemble in many ways those of international banks and exchange houses. Proposals of this limited character would seem to have better prospects of legislative approval and would probably secure every advantage to be expected from unlimited branch banking.

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THE RESIDUAL CLAIMANT THEORY OF DISTRIBUTION.

A SURVEY of the development of economic thought during its scientific period reveals the early emergence and curious persistence, in successive guise, of a theory of distribution conveniently denominated in the phrase of one of its most distinguished expositors "the residual claimant" theory.* That theory, briefly stated, is that in the distribution of the product of industry among the several factors claimant the share of each factor save one is determined by an independent or coordinate law of apportionment, and that the factor so excepted enjoys the peculiar advantage of receiving as its share the remnant of the product,— that is, the residual part not specifically allotted to the other claimants.

Rent, interest, wages, and — in later analyses — entrepreneur's profit have been treated by political economists as the essential factors in distribution. Four distinct phases of the residual claimant theory might thus be anticipated, accordingly as the landlord, the capitalist, the laborer, or the entrepreneur is, respectively, regarded as the residuary legatee. This result has been precisely realized in the modern history of economic thought. Theories of rent, interest, wages, and entrepreneur's profit — successively and in the order given — have been formulated upon the principle of a residual. The physiocratic theory of distribution was essentially a theory of rent residual. In the classical political economy it was the capitalist employer to whom accrued all the product not specifically allotted to the other claimants. Francis A. Walker, reacting from the gloomy determinism of the wage-fund theory, assigned the strategically favorable position of residuary legatee to the laborer. Finally, in the brilliant studies of Professor John B. Clark it is the entrepreneur, as distinct from the capital owner or the directive manager, whose gains or losses in dynamic industry are measured by a simple subtraction.

* Francis A. Walker, *Political Economy* (New York, 1883), p. 265.

In the following pages it is proposed to describe these several theories in their historical succession, and to suggest the essential inadequacy of any theory of residue in economic distribution.

I.

We turn to "the first scientific school of political economy" in the natural expectation of finding a formal theory of economic distribution. Yet the physiocratic doctrine was here more explicitly conceived than stated. The prime concern of Quesnay and his followers was: first, to demonstrate that, under the existing economic régime, France "was rapidly impoverishing itself, living above its means, and consuming not only its revenue, but its capital"; * and, second, to point out how national prosperity might be attained by a wiser expenditure of the national surplus, or *produit net*. That such a surplus did result from economic production, and that it remained in the possession of the land-owner upon the completion of the productive process, were facts so obviously confirmed by contemporary economic conditions that Quesnay — as much social reformer as abstract economist — devoted less attention to explaining how such a surplus resulted than to indicating how it could be wisely expended. The real contribution of Quesnay to the theory of distribution was thus not the hopeless intricacy of the *Tableau Économique*, but far more the underlying assumption of that work,— the concept that economic production leaves in the hands of the land-owner a residual or surplus.

In Turgot's *Réflexions sur la Formation et la Distribution des Richesses*,— a systematic exposition of what may in the main be regarded as the physiocratic doctrines,— the theoretical basis of the *produit net* received fuller explanation; and it is accordingly from its terse paragraphs that an explicit statement of the rent-residual theory may best be derived.

Of the five different methods of employing capital described by Turgot,† the perfected type of economic organization is pre-

* Henry Higgs, *The Physiocrats* (London, 1897), pp. 37-38.

† *Reflections on the Formation and the Distribution of Riches*, translated and edited by W. J. Ashley (New York and London, 1898), p. 81 (§ 83).

sented by "enterprises of agriculture," wherein the proprietor leases his land to a capitalist employer who advances the labor necessary to its cultivation, in addition to contributing his own "labor, risk, care, and skill." The resultant product is then divided among three factors,—the proprietor, the capitalist employer, and the laborers.

The primary deduction is the share of the laborers, and this is fixed by an independent natural law, since "in every kind of work it cannot fail to happen, and as a matter of fact it does happen, that the wages of the workman are limited to what is necessary to procure him his subsistence." *

A second share goes to the capitalist employer; and this is also a determined amount, since compensation for employer's risks forms a definite sum, and interest is equivalent to the revenue which would accrue without effort, were the same capital invested in land.†

These two deductions having been made to reward labor and capital, respectively, the residual reverts to land: "the surplus serves the Cultivator for paying the Proprietor for the permission he has given him to make use of the field for setting his enterprise on foot. This is the price of the lease, the revenue of the Proprietor, the *net produce*." ‡

The theory of rent residual thus outlined is defective in a dual sense. In common with all residual formulæ, it undertakes to present an empirical process as a theoretical principle. But, even in the form stated, it is vitiated by inherent fallacy. Böhm-Bawerk has made clear that a theory of interest based upon the "fructification" of land is an argument in a circle.§ When the attempt is made to formulate a theory of distribution in connection therewith, the defect becomes glaring. Rent is then described, as by Turgot, as the surplus of

* *Reflections on the Formation and the Distribution of Riches*, translated and edited by W. J. Ashley (New York and London, 1898), p. 8 (§ 6).

† "besides the return of their capitals, that is to say, of all their advances both original and annual, 1. a profit equal to the revenue they could acquire with their capitals without labour; 2. the wages and the price of their labour, of their risks, and of their industry; 3. that wherewith to replace annually the wear and tear of the property employed in their undertaking, the cattle that die, the tools that wear out, etc." *Ibid.*, p. 55 (§ 62).

‡ *Ibid.*, p. 56 (§ 62).

§ *Capital and Interest* (London and New York, 1890), p. 65.

product over wages and gross profit; but interest is defined in terms of rent. The resultant equations are indeterminate.

It is almost a commonplace to emphasize that the rent-residual theory of the physiocrats was a reflex of the economic conditions of contemporary France. "We must recollect," noted Arthur Young in 1792, "that much the greater part of the lands of France are not let at a money-rent, but at one-half or one-third produce. . . . Such a tenantry, contributing so little beyond the labour of their hands, are much more at the landlord's mercy than would be the case of wealthier farmers." * In the case of the poorer *métayers* who, "possessing nothing, are merely content to live," land rent easily became a gross residual. Where capital to an extent beyond the barest equipment found its way to the land, minimum return was grudgingly allotted to prevent withdrawal of capital from the soil.

II.

Adam Smith's theory of distribution was, in the main a rent-residual theory. The *Wealth of Nations* presented acute observations as to an independent method of rent determination, and the conspicuous extravagances of Quesnay and his school were omitted. But, all allowance made, Smith's general contention in this particular was, like the physiocrats', that wages and interest † are definite, independently determined shares of the product, that rent is a residue, and that this order of distribution is a consequence of the dominance of the landlord in the economic process.

The industrial revolution, on the threshold of which the *Wealth of Nations* was written, was completed in the generation separating David Ricardo from Adam Smith. Capital displaced land as the dominant factor in economic organization, and the strategically favorable position in economic distribu-

* *Travels during the Years 1787, 1788 and 1789; undertaken more particularly with a View of ascertaining the Cultivation, Wealth, Resources, and National Prosperity of the Kingdom of France* (2d edition, London, 1794), vol. i. p. 353 *et seq.*

† More accurately, "gross profit." The term "interest" is here employed to indicate the composite reward of the capitalist employer, in order to avoid possible confusion with the entrepreneur's gain or pure profit, hereafter considered.

tion before occupied by the land-owner was taken by the capitalist. This transition was reflected in economic writing by the passing of the rent-residual theory and by the emergence in the Ricardian economics of an interest-residual theory.

Professor S. N. Patten has happily emphasized a cardinal difference between the economic systems of Adam Smith and David Ricardo by denominating the first a theory of prosperity and the second a theory of distribution.* The bank restriction and the corn laws were the central topics of economic debate in England during the first quarter of the nineteenth century. The concrete issue presented by the bullion controversy was whether the recipient of a fixed income should suffer increasing injury by the progressive depreciation of the currency. The kernel of the early corn-law struggle was whether legislative policy should be shaped in the interest of the landlord or the capitalist.

Both questions were essentially problems of distribution; and it was inevitable, with public attention centred on these topics, that economic writing should pass from consideration of how the wealth of the nation was produced and augmented to an analysis of how that wealth was distributed, and how such distribution was likely to be affected by pending legislation. The endeavor of English political economy in the generation from Ricardo to the younger Mill is expressed in the Preface to Ricardo's *Principles of Political Economy and Taxation.*

> The produce of the earth — all that is derived from its surface by the united application of labour, machinery, and capital — is divided among three classes of the community; namely, the proprietor of the land, the owner of the stock or capital necessary for its cultivation, and the labourers by whose industry it is cultivated. . . . To determine the laws which regulate this distribution, is the principal problem in Political Economy.

The solution given by the Ricardian economists to this principal problem lacked nothing in definiteness. Capitalist employer, landlord, and laborers divided among themselves the total product of industry, the two latter claimants receiving

* "The Interpretation of Ricardo," in *Quarterly Journal of Economics*, April, 1893.

definitely determined portions, the first remaining in possession of the residue. In this process of apportionment the primary deduction was the share of the landlord, or rent.* This was easily ascertainable, being the difference between the product in question and that which would have resulted from the use of an equal amount of capital and labor under conditions identical with those of the least productive portion.†

Greater difficulty was presented by the second phase of the problem; viz., after the deduction of rent as the share of the landlord, what determines the amount of wages, or the portion of the laborers? Ricardo, Malthus, West, Mill, McCulloch, and the lesser lights of the period, each in turn addressed himself to this query, with results different in detail, but marked by a certain fundamental unity.

That unity lay in the distinction, drawn by Adam Smith and persisting through John Stuart Mill, between the tendency of wages in a stationary society and the rate of wages in a progressive or improving society. In a stationary society, where capital fails "to increase faster than mankind," wages tend to conform to the natural price of labor; that is, are dependent upon "the price of the food, necessaries, and conveniences required for the support of the labourer and his family." ‡ But in an improving society, where "the increase of capital is gradual and constant," wages do not conform to their natural rate, but attain a market rate, dependent upon "the proportion of the supply to the demand." § And, since "in proportion to

* "We shall begin with the explanation of Rent, or the share received by Landlords, as it is the most simple, and will facilitate the explanation of the laws upon which the shares of the Labourers and Capitalists depend." James Mill, *Elements of Political Economy* (London, 1821), p. 12.

† In the general tendency of the classical political economy to reduce economic laws to compact rules of thumb, this differential mode of rent determination was ultimately given a misleading simplicity. Thus John Stuart Mill loosely defined the rent which "any land will yield" as "the excess of its produce, beyond what would be returned to the same capital if employed on the worst land in cultivation" (*Principles of Political Economy*, Book II. chap. xvi. § 3). But the earlier writers were more careful. James Mill, in particular, formulated "a general expression for Rent" (*Elements*, 1821, p. 17), which is free from the defects pointed out by recent writers upon the subject; *cf.* a paper by the present writer, "The Concept of Marginal Rent," in *Quarterly Journal of Economics*, January, 1895.

‡ David Ricardo, *On the Principles of Political Economy and Taxation* (London, 1817), p. 90, 93.

§ *Ibid.*, p. 92, 93.

the increase of capital will be the increase in the demand for labour; in proportion to the work to be done will be the demand for those who are to do it," it follows that "the rate of wages depends on the proportion between Population, and Employment, in other words, Capital." *

Thus, in any event, wages are fixed by independent determination. Under certain industrial conditions, summed up in the phrase "stationary society," wages conform to the laborer's standard of life. Modified by an accelerated or retarded increase of capital, relative to the supply of labor, wages rise or fall in proportion to that modification.

With a clear differential constituting the share of the landlord and a distinct determination of the reward of the laborers, the classical political economy made no attempt to attain any independent law of gross profit or interest, but had recourse to the easy device of a residual. James Mill introduced his discussion of profit with the explicit statement: † —

> When it is established that the whole of the annual produce is distributed as rent, wages of labour, and profits of stock; and when it is ascertained what regulates the portion which goes to rent, and what the portion which goes to wages, the question is also determined with regard to profits of stock; for it is evident that all which remains is included under that denomination.

The neglect of the classical political economy to formulate an independent theory of interest proceeded from its failure to realize a positive service of capital in production. It is true that land, labor, and capital were formally described as a productive triad, entitled to "divide among themselves, the whole of the annual produce of the country." ‡ But, in actual analysis, land and labor were never conceived either as factors in production or as claimants in distribution in any degree co-ordinate with capital. The conspicuous fact in the industrial England of the Ricardians was that the other productive factors worked *for* the capitalist, not *with* him. With capi-

* David Ricardo, *On the Principles of Political Economy and Taxation* (London, 1817), p. 95; James Mill, *Elements of Political Economy* (London, 1821), p. 25.

† *Ibid.*, p. 54; *cf.* Francis A. Walker, *Political Economy* (New York, 1883), p. 267, for similar statements in the writings of the Ricardian economists, notably De Quincey's dictum that "Profits are the leavings of Wages."

‡ James Mill, *Elements of Political Economy* (London, 1821), p. 11.

tal so visibly dominant in the industrial process there seemed no occasion to inquire what was its real service in production and what its real title to a share in distribution.

The labored efforts of James Mill and McCulloch, and the more noteworthy attempts of Lauderdale and Senior to determine the economic function of capital,* were incident to a consistent development of the classical theory of value rather than to any direct interest in the query itself. Not until at a somewhat later period, when socialistic writing had challenged the right of capital to any share in distribution, did the orthodox political economy make any serious attempt to ascertain the service of capital in production.

Out of these conditions an interest-residual theory naturally grew. It corresponded to the obvious facts of contemporary industrial organization, and it reflected the dominance of the capital-concept in economic analysis. The purpose of a theory of distribution was to show not how much of the product the capitalist employer received by determination, but how he retained that which he already held by possession. A residual theory satisfied this requirement fully, and the further usefulness of an independent method of determination seemed only for demonstration and verification.

III.

The wage-fund theory held sway in English political economy, with at best inarticulate and unavailing dissent, for the two generations following Ricardo. The first formal indictment came from Longe in 1866, followed by Cliffe-Leslie's criticism in 1868, by Thornton's attack in 1869, and by Mill's ponderous recantation in the same year. Whatever new life was given by "patched and revamped versions" thereafter was finally extinguished by the powerful assault of Francis A. Walker, first, in a brilliant essay on "The Wage-fund Theory" in the *North American Review* in January, 1875; a year later, with convincing detail, in a treatise on *The Wages Question*.

* *Cf.* Edwin Cannan, *A History of the Theories of Production and Distribution in English Political Economy from 1776 to 1848* (London, 1893), chap. iv. § 4.

But neither in the essay nor in the book did Walker, any more than Longe, Cliffe-Leslie, or Thornton, substitute a new theory of distribution for the one whose mainstay he so completely destroyed. It is true that Walker's refutation of the wage-fund theory, far more than any of the critical studies which preceded it, contained positive elements of importance. Indeed, these early studies might reasonably be described as presenting "something like a proper philosophy of wages." * Yet by the widest stretch they could not be made to fill the gap in economic theory left by the abandonment of the wage-fund theory. This was the significance of Sidgwick's criticism in 1879 in reviewing recent contributions to the theory of wages: † —

> In short, it seems to me that while Professor Walker's argument gives a *coup de grâce* to the old wages-fund theory, it supplies no substitute for it; it leaves us with no theoretical determination whatever of the average proportions in which produce is divided between labor and capital.

It is not unlikely that Sidgwick's criticism, which, Walker subsequently admitted, "at the time seemed a hard judgment," played a part in stimulating the brilliant American economist to the further development of his thought and the attainment of "a complete and consistent body of doctrine regarding the distribution of wealth." ‡

The course of this further development was naturally enough in the direction of a theory of entrepreneur's gain, or net profit. A distinct service of *The Wages Question* had been the final differentiation, as an economic functionary, of the entrepreneur from the capitalist, and an analysis of the composite profit of the prevailing theory of distribution into two elements, each subject to independent determination — the one being interest due for the use of capital, and the other

* Francis A. Walker, "The Source of Business Profits," in *Quarterly Journal of Economics*, April, 1887, p. 267. In this noteworthy essay, Walker has left record of what he deemed the significance of his earlier studies; and few critics will quarrel with the cautious phrase of his summary; *cf.*, in particular, p. 266–267.

† "The Wages-fund Theory" in *Fortnightly Review*, September, 1879, p. 411. Quoted by Walker in "The Source of Business Profits."

‡ *Cf.* "The Source of Business Profits," in *Quarterly Journal of Economics*, April, 1887, p. 268.

being entrepreneur's gain, or net profit due for the personal exertion of the employer.

A logical development of earlier thought suggested to Walker the equivalence of demand and supply, and, upon more careful analysis, the principal of marginal productivity, as a law of interest.* It thus appeared that the intimate relation which had been conceived as existing between wages and gross profit, in reality existed between wages and net profit or entrepreneur's gain. Accordingly, a principle of apportionment determining the respective shares of the laborers and the entrepreneur became the essential problem of the new theory of distribution.

The Ricardian economics had made the capitalist employer the residual claimant in industry and the beneficiary of all increase in productivity from whatever cause resulting. This strategic advantage appeared necessarily connected with the status of residuary legatee in the distributive process. Certain facts of American industrial life lent color to the view that in practice the laborer, and not the entrepreneur, received, or might receive if he asserted his claim thereto, whatever economic surplus or unearned increment resulted from industry. The theoretical basis of the peculiarly favorable position of the American workman seemed, therefore, to be an independent law of entrepreneur's profit and a residual theory of wages. Under these conditions it is not surprising that a differential theory of profit and a residual theory of wages, "the key-stone to the arch," were presented by Walker, first in his *Political Economy* in 1883, and repeatedly thereafter with a precision of language and an abundance of detail that leave nothing to be desired on the part of the expositor.

The product of industry, according to Walker, is divided into four great shares and assigned to four classes of claimants in a certain order of allotment. First, rent is deducted, being determined in amount by the Ricardian formula. Next, interest is withdrawn, being fixed "by the productiveness of that last (considerable) part of the supply, which is applied to industry 'at the greatest disadvantage.'" † Entrepreneur's

* *Political Economy* (New York, 1883), part iv. chap. iii.; *First Lessons in Political Economy* (New York, 1888), chap. xxii.

† *First Lessons in Political Economy* (New York, 1888), p. 243.

profit constitutes the third deduction, being determined by a differential rent-like formula and consisting, in the case of each employer, of "that which he has produced over and above what the employers of the lowest industrial grade have been able to produce with equal amounts of labor and capital."* Three shares being thus assigned and three claimants satisfied, the remainder of the product reverts to the laborers as wages. As to the quality of this remainder, we are left in no manner of doubt.†

> This is the residual share of the product of industry,—residual in this sense, that it is enhanced by every cause which increases the product of industry without giving to any one of the other three parties to production a claim to an increased remuneration, under the operation of the principles already stated; residual in the sense that, even if any one or all of the other parties to production became so engaged in any given increase of the product as to become entitled to an enhanced share in its distribution, their shares still remain subject to determination by positive reasons, while wages receive the benefit of all that is left over after all the other claimants are satisfied.

Walker's theory of distribution, like List's theory of protection and Carey's theory of rent, represents a reaction born of intimate acquaintance with American economic conditions from the traditional doctrines of the English classical political economy. No one familiar with the obvious facts of industrial relations in the United States could be expected to assent to the primary assumption of the wage-fund theory, that a predetermined quota of the wealth of the country was set aside for the payment of wages, leaving the actual rate of wages dependent upon the number of persons applying for employment, irrespective of their industrial quality. It required less than Francis A. Walker's splendid equipment to reject the direct corollaries of the wage-fund theory, that "no gain in the efficiency of the individual laborer, whether taking the direction of greater energy or of greater economy; no mechanical invention, no chemical discovery, however much the capability of production may be increased thereby, can profit

* "The Source of Business Profits," in *Quarterly Journal of Economics*, April, 1887, p. 282.

† *Ibid.*, p. 282.

the laborer anything, except as it first enhances the profits of the employing class, and thereby adds to the capital of the wage fund, to be thereafter expended in purchasing labor." *

The formal status of the laborer in the United States was still as fixed by a contractual wage relation. But on every hand there were concrete facts lending color to the belief that wages were not paid out of capital, "the saved results of the industry of the past," but out of the "product of present industry," and that "production furnishes the true measure of wages." †

Had Walker stopped at this point, or, better, pushed his analysis further along the line of the last suggestion, "the relation of the laborer's efficiency to his wages," ‡ an important and enduring contribution to the theory of distribution would have been made. We should have then had an independent theory of wages in logical development of the suggestions thrown out by Jevons, Hearn, and Shadwell, whose dissent from the accepted doctrines and whose positive tendencies were noted and appreciated by Walker.‡ We should have probably obtained a productivity theory of wages in strict harmony with the most reasonable phases of current economic thought. The efficiency of the laborer would have constituted the upper limit of his possible wages, and his approximation thereto would have been determined by his competitive strength.

This was the safe ground to which a reasonable and logical reaction from the wage-fund theory should have led. But, intent upon showing that the laborer could not be deprived, if he so willed, of the product of his own increased efficiency, Walker, in expanding "a philosophy of the labor question" into a rounded theory of distribution, undertook the unnecessary task of proving that the whole surplus of industry was within the grasp of the wage-earner, and — alighted upon the shifting sand of a residual theory.§

* *Political Economy* (New York, 1883), p. 267. † *The Wages Question*, p. 128.

‡ "The Wage-fund Theory," in the *North American Review*, January, 1875, p. 118, note.

§ "the wages class receive a benefit from any increase of the product of industry corresponding to that derived by the residuary legatee, whenever the total value of the estate concerned is ascertained to have been, or by some unantici-

It is something akin to that "superabundance of proof" and that "vaulting ambition" in scientific analysis which Walker later found the defect of Carey's attack upon the Ricardian law of rent* that vitiates his own theory of wages and mars an otherwise valuable and suggestive theory of distribution.

IV.

"There is presented to the student of to-day a more highly organized industrial system, and a more complicated process of apportioning the social income, than those that were observed by Adam Smith, David Ricardo and John Stuart Mill." † Written in 1888 in preface to preliminary studies of joint authorship, these words fairly suggest the ultimate endeavor of Professor John B. Clark, then already clearly conceived and since prosecuted with a vigor and a fruitfulness that have enriched economic science and brought distinction to American scholarship.

It is interesting to contrast the scientific purposes of Francis A. Walker and John B. Clark in this connection. Both formulated theories of distribution; but the theories were conceived very differently, and each bears the imprint of its origin. Walker wrote in a spirit of reaction, with a spectral wage-fund still looming up before him, and with mind intent upon proving, above all things, that the laborer might make himself the direct beneficiary of industrial progress. In conception, as in content, Walker's theories of profit and distribution were corollaries of his philosophy of wages.

On the other hand, Clark's initial endeavor was a study of "the process by which the income of modern society is divided among its principal claimants"; and his ultimate purpose was "a systematic restatement of the facts and laws of the Distribution of Wealth." ‡ To this larger task a theory of profit constituted the natural approach, not in conse-

pated cause becomes, larger than was in contemplation of the testator when the amounts of several specific bequests were determined upon." "The Source of Business Profits," in *Quarterly Journal of Economics*, April, 1887, p. 283.

* *Land and its Rent* (Boston, 1883), p. 77.

† Clark and Giddings, *The Modern Distributive Process* (Boston, 1888), iii.

‡ *Ibid.*, p. iii.

quence of any peculiar interdependence of profit and wages, as Walker had insisted, but because of the industrial dominance of the entrepreneur and the signal inadequacy of prevailing theories as to his reward. Entrepreneur's gain was "the prize of the social contest,"* and the mode of its award was still undetermined.

To Clark as to Walker a signal defect of the Ricardian economics — made glaring in the light of American industrial conditions — was the failure to recognize the entrepreneur as a separate functionary in production, and entrepreneur's gain as a distinct share in distribution. But not content with the differentiation of the entrepreneur from the capitalist, Clark pushed his analysis further, and undertook to show that "the entrepreneur as such is a composite person," and that, "besides furnishing some capital, he still performs two unlike functions, and receives two distinct rewards."* The first of these is as an industrial organizer — the captain of industry of Walker's exposition — who "divides and subdivides the labor of making a product, and assigns to each workman the part of the process to which he is adapted," who "guards against wastes, impels workers to effective effort, and co-ordinates their labors."† In this capacity he is a directive laborer whose compensation is merely a higher variety of wages,— the wage of directive labor. The second and more distinctive function of the entrepreneur might be described as mercantile rather than mechanical, growing out of the fact that "the employer buys out his partners in the productive operation," and "ends by becoming the owner of every element of the product."‡ In this capacity he is a merchant, and "receives a margin of difference between what he pays and what he gets."‡

These two functions of the entrepreneur are, however, exercised alternately rather than co-ordinately; and with this distinction we come full face upon the characteristic features of Clark's theory of distribution, to which we now briefly turn.§ Submitting to a profound philosophical synthesis the

* Clark and Giddings, *The Modern Distributive Process* (Boston, 1888), p. 35.

† *Ibid.*, p. 36. ‡ *Ibid.*, p. 37.

§ *The Distribution of Wealth: A Theory of Wages, Interest, and Profits.* New York and London, 1899.

various elements which the older economists sought to describe by the terms "natural," or "normal," and "market," Professor Clark has conceived two vivid pictures of industrial life and distinguished them as "static" and "dynamic" respectively. In the first régime, that of a static society, population, methods of production, forms of industrial establishments, and wants of consumers are stationary and changeless. The productive factors are labor, capital (including land), and directive skill. In the distribution of the product a single law of apportionment prevails, namely, marginal productivity. Wages, interest, and the wage-like compensation of directive skill correspond, respectively, to the productive contributions of these several factors. Static industry affords no occasion for exercise of the "mercantile" function of the entrepreneur, and yields no element of true entrepreneur's gain, or pure profit.*

A static industrial society, so conceived, is, however, purely imaginary, or, if realized, is but momentary in duration. Dynamic influences — changing wants, mechanical improvements, increasing population, growth of capital, industrial reorganization — in ceaseless succession stir and agitate the real industrial world. The corollaries of a static régime — "no variation of actual prices from perfect competitive price; no change in ideal competitive prices themselves; no change in price-making conditions" † — disappear. Dynamic forces of disturbance and of friction produce incessant fluctuations of real or market, about theoretical or normal prices; and the real problem of distribution seems to be an apportionment of dynamic, not of static, values.

But the laws of static distribution are overlaid rather than overturned by dynamic forces. Slowly, but surely, competitive forces will award to the laborer as wages the product of marginal labor. Economic change and industrial readjustment may delay, but cannot prevent, capital from eventually receiving as interest, and directive labor as *quasi*-wages, shares

* "Cost prices are, of course, no-profit prices. They afford, in the case of each article, enough to pay wages for the labor and interest on the capital that are used in making it; but they give no net surplus to the *entrepreneur* as such." *The Distribution of Wealth*, pp. 78-79.

† *Ibid.*, p. 81.

of the product equivalent to their respective marginal contributions. Gradually, the disturbance subsides, static influences reassert themselves, market fluctuations decline, and normal standards emerge.

It is in this interval of transition, temporary or recurrent, that the second, or "mercantile," function of the entrepreneur has play. Market prices are carried now above, now below, normal or cost prices. The entrepreneur in his capacity as merchant assumes the variation; and the margin of difference constitutes the real share of the product,—pure profit or loss.

There is, however, a sharp distinction in mode of determination between the mercantile element of the entrepreneur's reward, or pure profits, and every other share in distribution. In the case of every other claimant the common law which obtains is that "competition forces the user of any productive agent to give to the owner of it the amount that it brings into existence. What it earns for its owner is determined directly, not residually." * In the case of the distinctive compensation of the entrepreneur the principle which prevails is residual determination: † —

> The reward of the entrepreneur in his capacity as owner of a product comes to him, as rain from the clouds, through the action of forces lying beyond the range of his dominant influence. He has nothing to do but receive it. He must accept what comes into his treasury, and submit to what goes out of it; the difference which is pure profit or loss, is fixed without appeal.

or, more briefly: ‡ —

> *Entrepreneurs'* profit and residual income are synonymous terms.

The careful student turns from Professor Clark's pages with a profound sense of scientific progress. Much that was dark is illumined, more that was entangled has been simplified, throughout there is suggestion and stimulus. Only one-half of the course has, however, been traversed; and the theory of dynamic

* *The Distribution of Wealth*, p. 345.

† *The Distributive Process*, p. 40.

‡ *The Distribution of Wealth*, p. 204.

economics lies before us but in outline. To that extent any criticism of its essential features is handicapped. It is conceivable that the fuller exposition which all students of economic theory eagerly await will bring conviction. But, with the evidence now at hand, the use of the residual principle in lieu of an independent or co-ordinate theory in determining the share of the entrepreneur as such seems regrettable.

The distinctive function of the entrepreneur — the mercantile activity which finds scope only under dynamic conditions — rests upon positive qualifications, and is exercised with more or less success according to the degree in which these qualifications are possessed. Pure profit consists in the excess of a fluctuating market price above the gross expenses of production. It will be great or small according to the success or failure of the entrepreneur in anticipating dynamic changes and in adjusting his operations accordingly. This anticipation and adjustment may range from a reasoned foresight to little better than a fortunate guess. Here an entrepreneur scales down his wage-list a little earlier or delays granting an unavoidable increase a little longer than his competitors. Here superior shrewdness or acumen secures, even though for a brief interval, more favorable credit relations, or trims a prompter course in avoiding the pinch and in profiting by the plethora of capital. Here a keener captain of industry outstrips his rivals in introducing an improved method of production or in establishing a more efficient form of organization. Here a producer is successful above his fellows in anticipating changes in consumers' wants. Pure profit may be "the prize of the social contest"; but the award is not by blind chance nor by uncontrollable circumstance, but a definite return for positive service. The same law of distribution — marginal productivity — which prevails with respect to the other claimants is applicable in the case of the entrepreneur as such. He will receive that portion of the product-value imputable to his distinctive contribution,— shrewdness, foresight, daring, even exploitative power. His share, like every other claimant's, is capable of independent determination and by the use of the same principle. It is residual only in the same sense as is every other claimant's, namely, that it may be estimated as that

part of the product left after the assignment of all the other shares by positive determination.

Standing in the whirl of modern industrial life, with the entrepreneur dominant as never before in the economic process, now reaping fabulous gains, now suffering ruinous losses, a residual theory of profit is a natural phase of economic analysis. When the vista shall have lengthened somewhat, and the essential principles of present-day production, now lost in the nearness of detail, shall have become visible, it is perhaps not too much to hope that a profit-residual theory will be relegated to the same limbo to which a rent-residual theory, an interest-residual theory, and a wage-residual theory have already been consigned.

V.

Viewed as independent analyses or disassociated from historical setting, the several phases of the residual claimant theory appear as inexplicable lapses of scientific inquiry. Examined in the light of theoretical context and studied in connection with practical conditions, the successive aspects of the theory become intelligible as the interpretation, graphic, though not ultimate, of contemporary industrial life.

The physiocratic theory of distribution reflected the economic organization of France of the middle eighteenth century. A dominant land-owning class and a rack-rented tenantry found theoretical expression in a rent-residual formula. When two generations later the problem of distribution became again, in the hands of the Ricardians, the prime concern of economic inquiry, the leadership had passed from the landlord to the capitalist employer. With the landlord and the laborer receiving predetermined, contractual amounts, and the capitalist employer in possession of the remainder, economic analysis naturally enough sought independent theories of rent and wages, and rested content with a residual theory of interest.

The wage theory of the classical political economy was, however, distinctly relative to the period and place in which it was formulated; and the attempt to apply its rigid corollaries to radically different conditions led to refutation and reaction.

Francis A. Walker began by demonstrating that the laborer could not be deprived, if he so willed, of the fruit of his own increased efficiency, and ended by asserting, in the form of a residual theory of wages, that the laborer tended to receive, in the distribution of the product, the benefit of all industrial advance.

Finally, in the writings of Professor John B. Clark are reflected that industrial dominance of the entrepreneur and that co-ordination of theories of distribution which characterize contemporary economic life and thought. A single distributive principle is recognized in normal industry; but, in so far as dynamic changes put the entrepreneur in possession of temporary gains, a residual principle is operative.

It thus appears that one last step remains to be taken before economic theory will have completed a full circle in its development. Landlord, capitalist, laborer, and entrepreneur have each in turn been elevated to the position of residuary legatee; and landlord, capitalist, and laborer have in turn been reduced to the status of co-ordinate claimant. The entrepreneur is now in possession. But, if the progress of economic thought affords any instruction, surely the conjecture may be hazarded that his tenure is limited, and that the theory of profit will eventually be co-ordinated with the general principle of distribution to which it now forms a nominal but illogical exception.

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OCCUPATIONS IN THEIR RELATION TO THE TARIFF.

Persons Occupied for Gain in the United States, according to the Census of 1900, Classified Approximately according to their Relation to Duties upon Foreign Imports.

The Census of 1900, when compared with the Census of 1880, discloses some important variations in the pursuits of the people. It shows a very large gain both in the aggregate and also in the relative numbers "occupied for gain" in the field, the forest, the furnace, and the factory alike. Some changes in the methods of enumeration are stated, which account in small part for these variations; but, after making allowance for these variations, the figures disclose a large reduction in the number of persons occupied in agriculture, coupled with a great increase in product. This reduction may surely be attributed to the more complete application of machinery to the cultivation of the soil and to much greater intelligence applied to farming, higher wages or earnings being the consequence or result of the increasing production and lessening cost.

The figures disclose a large proportionate increase in the number of persons, especially of women, occupied in trade and transportation. This change is due to the greater volume of products to be distributed. The figures of the number of shops for distribution also disclose an increasing number of small shops under individual management. The figures also disclose a moderate increase in the number of persons occupied in manufactures, in the mechanic arts, and in mining, coupled with a greater proportionate increase in the products, again showing a larger product per hand, higher wages and lessening cost. There are also a larger number of small workshops under individual management, in ratio to population, than ever before.

The proportion occupied in professional, personal, and do-

mestic service remains the same, within a very small fraction. The figures also disclose an increasing proportion of persons occupied in agriculture, manufactures, and mining, who depend upon exports for the disposal of the excess of their products after fully meeting domestic consumption, which excess, under existing conditions, can only be disposed of for export.

Whether by means of protection or in spite of it (now a purely academic question), have we not reached a point in our industrial condition when it may have become a more important problem how to keep the door open for our exports to foreign countries than how to close the door to foreign imports? The competition of low-priced or "pauper labor" no longer excites alarm, in view of the fact that foreign states are making an effort to meet the competition of the "cheap labor" of the United States.

It is now an accepted truth, axiom, or principle in economic science that, in all arts to which modern science, invention, and mechanism can be applied, the highest rates of wages or earnings are recovered or derived from the sale of products made at the lowest cost of labor computed by the unit of product, either by the bushel, the pound, the ton, or the yard.

In the subsequent analysis of the occupations of the working force of 1900, numbering a fraction over twenty-nine million (29,000,000) persons, the writer has found it impossible to set apart one million (1,000,000) persons whose present work would be seriously affected in an adverse way, even if free trade were suddenly adopted,— a change which no one proposes and which very few would advocate. In his own judgment there are not two-thirds that number of persons whose work would be adversely affected, but he has added another third lest he should be charged with a personal bias due to his own point of view.

A true method of revenue reform might be, first, to remove all duties on crude and partly-manufactured materials, with a corresponding reduction in rates on finished products in which they are component materials. Then, bearing in mind that under normal conditions of peace the revenue from liquors and tobacco, domestic and foreign, covers the cost of civil government, including army and navy on a peace basis, other

duties may be removed gradually year by year with the falling in of pensions.

With this introduction the subsequent tables are submitted for criticism and correction, if any errors can be found. The judgment of economic students will doubtless vary in some measure in setting apart the relative number of persons who now depend in part upon protective duties; but the writer doubts if any one whose sole purpose is to elicit the truth and the facts, of which these figures are symbols, can make any considerable change in the relative proportions submitted in the subsequent tables. When the facts become established, the dread of business depression predicted, if any complete revision of the duties upon imports is undertaken, may be wholly removed.

Can it be assumed that an abatement of the duties on fish, potatoes, coal, cord-wood, hay, scrap iron, and steel, or upon the iron ores of Canada and Cuba, can cause business depression among the consumers, who would thus be supplied with a greater abundance of crude materials and food than ever before? Can it be assumed that the removal of the taxes upon Canadian lumber or upon the beef cattle of Canada and Mexico will cause business depression among the farmers of the West, who would thus be supplied with a greater abundance at a lessened cost of building and fencing material and of stock cattle to be fattened and finished on their grain crops? Can it be assumed that, even if the total abatement of duties on sugar could be carried with due regard to present revenue, it would cause business depression? If free sugar were assured, the dairy farmers and fruit-growers would be enabled to make an immense increase in their product of condensed milk and of jellies, jams, and preserves. Can it be assumed that the free admission of wool would cause business depression, even if the duties on woollen and worsted fabrics were correspondingly lessened to a revenue basis?

In this compilation I have made use of the condensed table of occupations given in the introduction to Census Volume II. on Population, in which volume more elaborate statements may be found.

In the graphical table I have indicated in the shaded portions

1. AGRICULTURE.

10,381,765.

a Subject to foreign competition	200,000
Free from foreign competition	10,181,765

Average proportion of the products of agriculture exported in recent years.

2. PROFESSIONAL SERVICES, 1,258,739. Free of foreign competition.

3. DOMESTIC AND PERSONAL SERVICE.

5,580,657.

Free from foreign competition.

4. TRADES AND TRANSPORTATION.

4,766,964.

Free from foreign competition.

5. MANUFACTURES, MECHANIC ARTS, AND MINING.

Subject to urgent foreign competition, II.	400,000
Subject in part to urgent foreign competition, III.	400,000
Free of foreign competition	6,285,992
Total	7,085,992

the numbers subject to foreign competition even in part; in the white sections, the proportions wholly or substantially free. In the section of Agriculture, I have indicated above the dotted line the proportion devoted to home consumption, and below the dotted line the proportion exported on the average of recent years.

In one respect the figures of the imports and exports of this country do not mean the same thing as those of European countries. We export our surplus products: their imports consist of food, fibres, and fabrics necessary to their subsistence and to the conduct of their manufactures. Except when due to a short crop, as in the last year, a falling off in our exports of an increasing product, merely stands for an increased home consumption. An increased home consumption and an increasing import, especially of the materials used in domestic manufactures, which is so conspicuous at the present date, indicates progress, and not retrogression of our domestic industry and consumption.

The so-called balance of trade expressed in terms of money is fallacious and misleading. When we export our surplus which we cannot consume, and receive in exchange the articles of necessity, comfort, and luxury which we want, the larger the excess of imports over exports, the greater proof of our own profit.

In order to enable any one to decide what course to take in this matter, the following analysis of the occupations of the persons who were occupied for gain in the census year are now presented. This census is the most complete ever taken. The same enumerators who counted the population also made the classification by occupations. It is stated that in each census many persons have classed themselves as laborers and are listed under the head of "Personal Service" who are occupied in farm labor during some part of each year. The same qualification was made by Superintendent Walker in 1880. This variation does not therefore affect the general conclusion.

Attention is first called to the general classification under the Census of 1900:—

Population		76,303,387
"Occupied for gain,"—*i.e.*, working for wages or profit in money:		
Males	23,754,205	
Females	5,319,912	29,074,117

1 in each 2.61 of the whole number. In 1880 the proportion occupied for gain was 1 in each 2.93.

Occupations as classified in the census under general or collective titles:		
Agricultural pursuits		10,381,765
Professional service		1,258,739
Domestic and personal service		5,580,657
Trade and transportation		4,766,964
Manufacturing and mechanical pursuits		7,085,992
Total		29,074,117
Males	23,754,205	
Females	5,319,912	29,074,117

Each of these general classes must be subject to a second analysis, in order to separate those who are not exposed to competition from the import of products from other countries from those who are.

For this purpose three lists are submitted:—

I. Persons occupied for gain who would be free from the competition of an import from a foreign country (omitting Canada) if there were no duty on imports of any kind.

II. Persons occupied for gain of whom a very small number may be subject to foreign competition, but the price of whose product depends in large measure upon the demand for export; also including persons occupied for gain who are now subject to, but who would be practically free from, foreign competition if the materials of foreign origin which enter into their processes were free of duty.

III. Persons occupied for gain who would be subject to severe foreign competition if all duties on imports were suddenly removed.

(Canada is omitted because we now sell to Canada nearly double the value of products of agriculture, mines, and factories that we import from her.)

It is not held that these divisions have been or can be exactly made, but the variations are so small as to make the margin of error a negligible quantity.

In dealing with agriculture, I have put into Class III. of

persons subject to foreign competition such number of persons as would correspond to the relative valuation of products of the farm which may be imported, as compared with the valuation of the crops of which products of like kind cannot be imported in any quantity. Many of these crops depend on the export of our surplus in establishing the price of the whole.

In the census of Agriculture the total value of all farm products at the farms is computed at $4,739,118,752, divided among 5,739,657 farms, at an average of $826 per farm. Reasons are given why this is a slight underestimate, and that the value of all farm products exceeds $5,000,000,000. The number of farm products which may be exposed to the competition of an import of like kind is very small. The special crops are: —

Rice	valuation,	$7,891,613
Flaxseed	"	19,624,901
Tobacco	"	56,993,003
Hops	"	7,271,230
Sugar	"	24,584,459
Wool	"	45,723,739
Mohair	"	267,864
		$162,356,809

To these may be added hides and skins, a few fruits and nuts, and some other small items. A small quantity of cotton is imported from Egypt; but it is for special use, and supplements rather them competes with American cotton.

Adding these items, we reach about $200,000,000 worth, subject to foreign competition, or only 4 per cent. of the whole valuation, while $4,800,000 worth rests upon the export of the surplus to fix the price of the whole.

But, even in respect to this $200,000,000 worth, not one-half would be seriously affected by an abatement of duties.

Tobacco must be taken out, because it will always be a prime source of revenue both by excise and customs taxes.

Domestic wool has always been in quickest demand, and has brought the highest relative price, when duties have been lessened or wholly abated after a short period of adjustment to new conditions, the reason being that the manufacturers

must have free wool in order to compete with foreign manufacturers on even terms.

No hand-cultivated rice can compete with the rice of Louisiana and Texas, where the rice grounds harden in the harvest season so as to permit the use of harvesting machinery.

No hops can compete with the hops of the North-west.

Dealing with persons occupied in agriculture, in the proportion of one-half the valuation which may be subjected to foreign competition, we get 200,000 persons only out of 10,000,000 subject to competition, leaving 9,800,000 free of foreign competition and in large measure dependent upon exports.

With this explanation I now submit the tabulation under the three heads previously named.

Class I.

Persons occupied for gain who are free from the competition of an import from a foreign country.

(We sell to Canada twice the quantity of the products of agriculture and of manufactures that we import. In ratio to numbers the Canadians are now our best foreign customers, and there is little opposition to the treaty of reciprocity.)

Free of Foreign Competition.

In agriculture or listed under that title.

Farmers, planters, and overseers	5,674,875	
Agricultural laborers	4,410,877	
Gardeners, florists, and nurserymen	61,788	
Dairy men and women	10,875	
Other agricultural pursuits	5,530	10,163,945
Lumbermen and raftsmen		72,020
Stock raisers, herders, and drovers		84,988
Turpentine farmers and laborers		24,737
Wood-choppers		36,075
		10,381,765
Less the number subject to competition removed to Class III.		200,000
		10,181,765

ALSO FREE OF FOREIGN COMPETITION.

All persons in professional service	1,258,739
All persons in domestic and personal service	5,580,657
All persons in trade and transportation	4,766,964
	21,788,125

FREE FROM FOREIGN COMPETITION IN MANUFACTURES AND THE MECHANIC ARTS.

Persons occupied in building trades		1,212,526
Oil wells and employees		24,626
Brick and tile makers (with a few exceptions)		49,933
Miners and quarrymen (with a few exceptions)		563,866
Bakers		79,188
Butchers		113,956
Confectioners (with a few exceptions)		31,194
Millers		40,548
Blacksmiths		226,477
Iron and steel workers (with a few exceptions)		290,611
Steam boiler makers		33,046
Stove, furnace, and grate manufacturers		12,473
Wheelwrights		13,505
Boot and shoe makers (with a few exceptions)		208,912
Leather curriers and tanners (with a few exceptions)		42,671
Bottlers and soda water manufacturers		10,519
Cabinet makers (with a few exceptions)		35,619
Coopers		37,200
Saw and planing mill operatives		161,624
Other wood workers		111,273
Paper box makers		21,098
Charcoal, coke and lime burners		14,448
Model and pattern makers		15,073
Rubber factory operatives (with a few exceptions)		21,866
Upholsterers		30,821
Small miscellaneous industries (with a few exceptions)		471,300
Printers, lithographers, and pressmen (with a few exceptions)		155,147
Fishermen and oystermen	68,177	
Less the small number in deep sea fisheries transferred to No. III., numbering not over	8,000	60,177
Engineers and firemen	223,495	
Less the proportion probably occupied in arts in Classes II. and III. in part or fully subject to foreign competition	23,495	200,000
		4,289,697

Class II.

Persons occupied for gain who would be practically free from foreign competition if materials of foreign origin used in their processes were free of duty.

Chemicals (other than oil wells and oils)		14,814
Glass workers (subject to a few exceptions)		49,998
Marble and stone cutters (subject to a few exceptions)		54,460
Potters (mostly making tiles, drain pipes, etc.) (subject to a few exceptions)		16,140
Butter and cheese (subject to a few exceptions)		19,241
Food preparations	"	28,782
Machinists	"	283,145
Tool and cutlery makers	"	28,122
Wire workers	"	18,487
Harness and saddle	"	40,101
Trunk and leather case	"	7,051
Brewers and maltsters	"	20,962
Distillers and rectifiers	"	3,144
Brass workers	"	26,760
Clock and watch makers	"	24,120
Gold and silver workers	"	26,112
Tinplate and tinware	"	70,505
Other metal workers	"	56,602
Bookbinders	"	30,278
Engravers	"	11,151
Paper and pulp mills	"	36,328
Textile industries	567,065	
Less those occupied in the finer and fancy fabrics, say, removed to Class III.	67,065	500,000
Tailors, seamstresses, milliners, shirt-makers, and makers of other clothing	907,466	
Less those who are on the finest articles of fancy and fashion	7,466	900,000
Engineers and firemen		23,495
Glove makers	12,271	
Less removed to Class III.	2,271	10,000
Broom and brush makers		10,220
Photographers (with a few exceptions)		26,941
Tobacco and cigars (with a few exceptions)		131,452
Manufacturers and officials	243,082	
Less transferred to Class III.	3,082	240,000
		2,708,411

Deducting for the few exceptions in fine and fancy cut and plate glass; Italian marble; fine and hand-decorated china; Stilton, Roquefort, and other fancy cheeses; Scotch marmalade and the like; worsted combers and other machinery in which there is much hand work; fancy cutlery; English saddles and harnesses of high cost; hand-made trunks, boots, and shoes; foreign beer and ale of special brands; fine wines and liquors; hand work in brass, copper, gold, and silver; a few watches; finely bound and printed books, engravings, and photographs; fancy paper; hand-made brushes, and a few other articles not specifically transferred to Class III., estimated in number at	312,116
There remain in Class II. free of competition	2,396,295

Class III.

Subject to foreign competition.

In agriculture	200,000
In deep-sea fisheries	8,000
Textile operatives	67,065
Clothing	7,466
Glove makers	2,271
Manufacturers and officials	3,082
	287,884
Add from tabulation of Classes I. and II. as per previous list of exportations	312,116
Probable number subject to foreign competition	600,000

That number comprises all who, in the judgment of the compiler, could be subject to foreign competition of an adverse or urgent kind if no duty, even for revenue, were maintained. A moderate duty for revenue purposes would incidentally protect them.

Recapitulation.

Class I. Persons who cannot be subjected to foreign competition, but who pay their proportion of duties on imports and of the enhancement of prices brought into effect by protection	26,077,822
Class II. Persons not subject to foreign competition, whose industry in many branches would be promoted by the abatement of duties on materials of foreign origin used by them	2,396,295
Class III. Persons occupied in arts which would require a readjustment if all duties were suddenly removed, which no one proposes	600,000
Total	29,074,117

In dealing with Classes I. and II., I have used my own experience and judgment in putting into Class III. such proportion of persons occupied (especially in the textile arts) as may make the finer and fancy or hand-made fabrics which depend mainly on fashion and fancy for their sale.

I have also assumed the abatement of duties on wool, hides, drugs, dyestuffs, and chemicals, from which about $15,000,000 of revenue are now derived. So long as these taxes exist, the manufactures of textile fabrics, boots, shoes, and leather goods, paper, and many other articles, are restricted and their exports are much lessened.

Under Class II., subject only in small part to foreign competition, are also listed glass, pottery, chemicals, tools, brewers, clocks, watches, gold and silver ware, tailors, milliners, photographers, and machinery. I have made allowance by exceptions in these arts to the best of my judgment.

In all these arts there is, and probably always will be, an import of the fine and fancy fabrics or of articles chosen for style or fashion, all of which are suitable subjects for revenue duties. These imports rather set a standard for domestic manufacturers to emulate than subject them to competition in the great bulk of their products, which are for the use of the millions rather than the millionaires. Tobacco will always be subject to revenue duties. Under existing conditions there is no justification for duties on machinery, pig-iron, copper, coal, ores, or other metals, which are the materials and tools of our domestic industry. We are exporting the highest types of metallurgy and machinery, while the tax on special machinery of other kinds which we import, and upon coal, ores, hay, potatoes, fish, beeves, and other necessities, are burdens upon industry of the most obnoxious kind.

If any one takes exception to this division, and now justifies the continuance of a tariff for "protection with incidental revenue," let him carry over as many as he honestly can from Classes I. and II. into Class III., giving reasons for such changes. I think it will prove impossible for any sincere student of the subject to designate one million persons, out of the twenty-nine million now occupied for gain, whose industry would be seriously or adversely affected, even if all duties on

foreign products of like kind were at once removed,— an act which no one proposes. If all duties on materials were removed, the number would be lessened far below a million.

On the other hand, there are proportionately in agriculture from 1,500,000 to 2,000,000 out of 10,000,000 who rest upon exports for the disposal of their surplus products. There are about as many persons occupied even in manufacturing and in the mechanic arts only, whose products are exported, as there are in all the same arts which are now or can be protected by duties on imports. Out of 29,000,000 persons occupied for gain, not over 3,000,000 to 4,000,000 are or can be directly affected by tariff legislation, either by the obstruction of exports or imports in consequence of duties on imports. 25,000,000 are engaged in arts necessary to the existence of society and which can neither be promoted nor retarded by duties on imports, except so far as the cost of their living is increased by an ill-adjusted or injudicious system of taxation.

I suggest to students a computation of occupations in the lines of this study by the use of the census data of occupations and by the use of the admirable monographs on all branches of manufacturing. The figures do not correspond exactly, because the numbers given in the schedules of manufacturing are of persons who were occupied in each art at the date of the census, while those given in the tables of occupations were of persons numbered according to their own declaration of their customary occupation. The margin of variation proves the close correspondence of the two sets of figures taken by two classes of census experts.

Separate studies of the arts of each State and each city would also disclose the relative importance of each art or industry in each section of the country, while the study of the manufactures of each city would disclose the assumed benefit of duties on imports and the advantages of the remission of duties upon materials of foreign origin which are used in domestic industry.

EDWARD ATKINSON.

BROOKLINE, MASS., December, 1902.

THE LATER HISTORY OF THE STANDARD OIL COMPANY.*

I.

1877–1888.

THE organization of the Standard "Alliance," which in 1879 controlled the transportation of oil by rail and by pipe-line and produced 95 per cent. of the refined oil of the country, was an informal substitute for the modern trust. The bond of unity was common ownership of stock in the various companies of the "Alliance" and personal agreement between the officers of the respective companies and the officers of the Standard Oil Company.† The Standard Alliance included the Standard Oil Company of Cleveland, the Standard Company of Pittsburg, the Acme Oil Company of New York (located at Titusville), the Imperial Oil Company at Oil City, the Atlantic Refining Company of Philadelphia, the Camden Company of Maryland, Charles Pratt & Co. of New York, J. A. Bostwick & Co., Sone & Fleming Manufacturing Company, Warden, Frew & Co. of Philadelphia, and the Baltimore United Oil Company of Baltimore.‡ The petroleum producers, on the other hand, had meantime been organizing to stay the further progress of the Standard "Alliance" in a league which suggested in its forms a revival of the fifteenth-century guild.

In 1877 local lodges of the fraternal General Council of the Petroleum Producers' Union had been formed, under the strictest obligations of secrecy, throughout the oil region. Eventually, from 2,500 to 3,000 producers were enrolled as members in the local lodges, which sent delegates to the General Council. The object of the Union was "the collection and dissemination of valuable information respecting the production, storing, or

* Being the continuation of "The Rise and Supremacy of the Standard Oil Company," *Quarterly Journal of Economics*, February, 1902, which brought the history of the company to 1879.

† Hepburn Report, 1879, 2614. ‡ *Ibid.*, p. 42, 2615.

tanking, shipping, refining, and consumption of petroleum; the securing the most advantageous facilities for transportation; the protection of the producing interests against unfriendly legislation and unjust exactions; the correction of all abuses and pernicious practices detrimental to the producing business and the improvement of the trade generally." At the first meeting of the General Council, in the Universalist church in Titusville, November 21, 1877, Mr. Benjamin B. Campbell, a well-known opponent of the Standard, was elected president; and standing committees were chosen on finance, reports, and statistics, transportation, pipe-lines, patents, refining, legislation, national legislation, and legal remedies. Once a month the General Council met regularly at Titusville.*

The first aim of the society was to stop the drilling of new wells and to induce producers to provide storage for their oil, in order that they might not be subject to the necessity of forced sales. Throughout north-western Pennsylvania, in the counties of Allegheny, Armstrong, Butler, Clarion, Venango, Crawford, and Warren, this object was effected; and, "had it not been for the unusual development of the oil field in McKean County," as the report of the General Council naïvely explains, these efforts might have succeeded. But "the producers continued to crowd each other with new wells and to rely solely upon the United Pipe Line to furnish storage and local transportation. The result was that the eager driller of wells found his product at the mercy of the purchaser, and was speedily subjected to low prices and loss of oil."† Of more importance were the efforts of the society to secure transportation facilities. At a time when the transportation agents, both local and to the seaboard, were in alliance with the Standard interests, the Equitable Petroleum Company, formed by the producers of McKean County to provide an outlet by pipe-line to the McKean & Buffalo Railroad, thence to Buffalo, and by way of the Erie Canal to New York, was enthusiastically encouraged by the General Council. The Committee on Legislation meanwhile had introduced into

* Investigation of Trusts, House Reports, First Session, 50th Congress, 1887–88, vol. ix. p. 692: a copy of the constitution is given, p. 47.

† Investigation of Trusts, Congress, 1888, 692.

Congress and into the Pennsylvania legislature bills regulating the companies engaged in the transportation of petroleum. These proposals, however, were not well received; and in its report in 1878 the disgruntled committee, describing its labors, said: "It has been simply a history of failure and disgrace. If it has taught us anything, it is that our present law-makers are, as a body, ignorant, corrupt, and unprincipled."* So far, in spite of all its activity, the General Council had brought no practical relief to the producers: so that when, in May, 1878. the Committee on Legal Remedies advised resort to whatever existing laws there might be, the Council at once authorized the committee to take the necessary steps.

The committee immediately laid its grievances before the attorney-general; and on behalf of the committee the attorney-general brought action against the United Pipe Line Company for the forfeiture of its charter, and prayed for an injunction restraining the Pennsylvania Railroad, the Atlantic & Great Western Railroad, the Lake Shore & Michigan Southern Railroad, and the Dunkirk, Allegheny & Pittsburg Railroad from "combining to create and perpetuate a monopoly of the oil business, from granting unreasonable rebates to the Standard Oil Company and its allies, from refusing cars to shippers, from breaking connections with other roads, from buying and selling petroleum in connection with the Standard combination, from refusing transportation, from making discriminations in form of one shipper against another, and from granting greater facilities to one than to another."

Amid great popular excitement at Bradford these proceedings were decided upon. Mass meetings were held, processions paraded the streets, and riot seemed imminent. The recent months had been marked by heavy depression in the oil trade and bitter antagonism of producers and oil buyers. Riotous meetings were held before the United Pipe Line Company's offices; men were hanged in effigy; and processions of masked men marched the streets, and groaned and hooted before the offices of the buyers. Numerous secret societies were formed among the producers; and every morning the streets and side-

* Investigation of Trusts, Congress, 1888, 693.

walks were found placarded with cabalistic signs and proclamations. About this time occurred the investigation of railroads in New York by the Hepburn Committee of the legislature; and a similar investigation of the petroleum trade in Pennsylvania was being urged. In the popular frenzy of the moment all the officers of the Standard Oil Company were indicted for conspiracy in restraint of trade, and requisition made to the governor to secure their extradition from New York.*

All these troubles arose from the depression incident to the excessive production of the McKean County wells, which was greater than the capacity of the storage tanks. The storage tanks were built by the pipe-line companies under contract with the producers to "carry in its system of pipes and tanks an amount of petroleum not exceeding the capacity of the tanks." The company took the position that, under this contract, when a producer once filled a tank to its capacity, the company's obligation ceased: merely selling to the Standard certificates for the contents of the tank did not relieve the tank of oil; and, accordingly, since it had contracted merely for the oil in the tank, the company might refuse to take oil from the well except at a reduced price. As an incentive to hasten the movement of oil from the tanks in the producing region, the Standard agreed to allow, to the producer who sold his oil for immediate shipment at this reduced price, an equivalent amount of room for his future production. Under the circumstances, such a rule was wise. Although new tanks were being built as fast as possible, the existing tanks were full and not all the oil could be stored. By extraordinary effort however, and the expenditure of millions of capital, the Pipe Line Company finally erected sufficient tankage to hold the accumulated surplus of oil; and the producers in due time were satisfied.

In the suit which was brought against the United Pipe Line Company, asking for the forfeiture of its charter on the ground that it had made discriminations in pipeage, it appeared that, so far as any discriminations existed, they were

* Investigation of Trusts, Congress, 1888, 706.

due to contracts for special rates inherited from the lines which had recently been absorbed in the company,— among them, curiously enough, one between a member of the prosecuting committee of the Producers' Union and the Mutual Pipe Line Company.* These discriminations were recognized by the Standard to be contrary to public policy, and were at once discontinued. The grievance for which the producers had brought prosecution against the railroads was a shipping agreement between the Standard and the railroads. This agreement provided that, since the Standard shipped 90 per cent. or more of the crude petroleum of the region, it might make requisition at any time for that per cent. of the oil cars of the railroad. The producers maintained, however, that, since the Standard owned already a large number of private cars running on the railroads, it ought not to be allowed its pro rata allotment of the railroad's cars upon demand; particularly when, as happened at this time, the 10 per cent. of railroad oil cars was insufficient to transport the oil which independent producers wished to ship. The demands of the producers were unusual; and the refusal of the transportation companies to grant them seems quite within their rights. When it is considered that, meantime, propositions were being made to the producers by the Standard, according to which the price of crude oil should be based upon the relative price of refined, it would seem that a fair attempt, at least, had been made to satisfy the producing interest.† Indeed, the issue of those suits proved them to be merely the ebullition of excited popular feeling. The indictment of conspiracy against the officers of the Standard was continued, and eventually dropped.‡ The suits against the Pennsylvania Railroad and against the United Pipe Line Company were protracted, § and finally dismissed by an agreement among all parties; and with the passing of this period of litigation the importance of the Petroleum Producers' Union practically ended.

In 1881 the Standard Oil Company of Ohio, the nucleus of the Standard "Alliance," was a corporation capitalized at

* Report of Industrial Commission, 1900, 1. 476–479.

† Investigation of Trusts, Congress, 1888 694.

‡ *Ibid.*, 710. § *Ibid.*, 711.

$3,500,000. Since the formation of the "Alliance" it had maintained connections with its allies by a union, not of corporations, but of stockholders. "Then," as the solicitor of the Standard Oil Company explains, "for convenience of control and management the Standard Oil Trust was formed. It was simply an agreement, placing all the stock of these various companies in the hands of trustees, declaring the terms on which they were held, and providing for the issuance of a certificate showing the amount of each owner's interest in the stock so held in trust. This agreement did not in any essential manner change the character of the association previously existing. Its essential character was simply a common ownership of stock in various corporations. If they had so preferred, the owners of these several associated companies could have organized — in the State of New York, for example — with any capitalization desired. Each could then have lawfully combined with all the other companies, forming one corporation to transact business wherever desired. But it seemed preferable, instead of organizing one corporation in New York, to organize a corporation in each State where business was being carried on, so that the business transacted in each State might be conducted by a home corporation, subject in all respects to the law of the State where located. Accordingly, we organized a Standard Oil Company in New York, in New Jersey, in Kentucky, in Iowa, in Minnesota; and similar corporations already existed in Ohio and Pennsylvania." *

As the first "trust" form of combination, the agreement under which this union was brought about deserves attention. There were three classes of parties to the contract: first, all the stockholders and members of the Standard "Alliance," together with members of some other companies; second, all the more important officers and stockholders of these several companies; and, third, a portion of the stockholders and members of some additional corporations and limited partnerships. Provision was made for the admission of new companies and individuals and for the formation, whenever advisable, of a Standard Oil Company in any State or Terri-

*S. C. T. Dodd, quoted in *Trusts or Competition*, edited by A. B. Nettleton, Chicago, 1900, p. 197.

tory in the Union. The parties of the several classes were to transfer all their property to the Standard Oil Companies in their several States, in consideration of which they should receive stock equal at par value to the appraised value of the property so transferred.* This stock — and here is the significant feature of the new organization — was to be delivered to trustees, and held by them and their successors thereafter; and no subsequent issue of stock should be made by the companies except to these trustees. In return for the stock intrusted to them, the trustees were to deliver trust certificates, equal to the par value of the stock of the several Standard Oil Companies to be established and to the appraised value of the stocks of other companies delivered to the trustees. The trustees provided for were nine in number. They were John D. Rockefeller, O. N. Payne, and William Rockefeller, elected to hold office till 1885; J. A. Bostwick, H. M. Flagler, and W. G. Warden, to hold office till 1884; and Charles Pratt, Benjamin Brewster, and John D. Archbold, to hold office till 1883. At each annual meeting the certificate owners elected three trustees, for three years each, to fill vacancies due to expiration of term. Such was the "trust" as formed by the agreement of January 2, 1882.†

By an amendment two days later this agreement was slightly changed, as it was deemed inexpedient that all the companies mentioned should transfer their property immediately to the several Standard Oil Companies. The trustees were given power to decide what companies should convey their property and when the sale should take place. The powers of the trustees, then, as defined by the "trust" agreement, were to collect on the stock which they held the dividends of the several constituent companies, and afterwards, upon the trust certificates outstanding, to disburse their receipts as dividends.

*The 39 companies who signed the agreement were subsequently merged into 20. The list of the original 39 is given in Investigation of Trusts, 1888, Congress, 350. The list of the resulting 20, with the appraisal of their property, is given in Report of the Industrial Commission, 1900, i. 301. The capitalization of these companies is $102,283,700: the excess of the appraisal over the capitalization is $19,397,612.63.

†The trust agreement is given in full in Investigation of Trusts, Congress, 1888, 307.

Four years before the formation of the trust, two pipe-line companies, the Seaboard Pipe Line Company and the Equitable Petroleum Company, projected to afford an outlet to the seaboard, had been organized by oil producers.* Upon their failure, the producers organized the Tidewater Pipe Line Company, which ran from the Bradford region to Williamsport, a distance of 110 miles; and thence, by a connection with the Philadelphia & Reading Railroad, the oil was carried a distance of 250 miles to Philadelphia.† On the 1st of June, 1879, this company commenced the shipment of oil. The railroads were not content to see the oil traffic slip through their hands; and on the 5th of June, at a conference between the four trust lines at Niagara Falls, resolute measures were adopted to drive this rival transportation agent from the business. The rate on crude oil per barrel was lowered to 20 cents on all oil of the Standard "Alliance" moving from the oil regions to New York, Philadelphia, and Baltimore.‡ A corresponding reduction of the rate to the general public was made from $1.15 to 30 cents. These rates took effect at once; § and, as competition continued, a further reduction was made on August 1 to 15 cents per barrel.‖

Throughout the period of the organization of the trust, and for a full year after, this fierce contest between the railroads and the Tidewater Pipe Line Company continued. The immediate effect, of course, was to benefit the shippers, and particularly the largest shipper, which was the Standard. The ownership by the Standard of the terminal facilities and of the greater number of the oil cars of the railroads now became a fact of importance. In consideration of its heavy investments in these interests, and of its agreement to ship and to unload its oil at its own risk, the Standard had already been allowed rebates.¶ But now the Standard began the building of pipe-lines to the seaboard and the formation of the National Transit Company. As pipe-lines were a cheaper mode of transportation than railways, the building of these lines made necessary a

* Investigation of Trusts, Congress, 1888, 696.

† Hepburn Report, 1879, 3493; Report of Industrial Commission, 1900, i. 636.

‡ The rates are given in full in Hepburn Report, Exhibits, 1879, 621, 622.

§ Hepburn Report, 1879, 3688. ‖ *Ibid.*, 45. ¶ *Ibid.*, 1471.

readjustment of freight rates; and, as the pipe-lines then building could not carry the oil the entire distance, contracts for joint carrying had to be made with the railroads. The first contract — made between the National Transit Company and the Pennsylvania Railroad on May 6, 1881 — related to the apportionment of the freight when the haul was partly by pipe-line and partly by rail. The Pipe Line Company guaranteed the railroad one-third of the transportation of oil to the seaboard.* The Standard was to pay exactly the same rate as other shippers over the railroad. On such oil as was carried partly by pipe-line and partly by rail, a through rate was made, of which the pipe-line naturally received a share; and, finally, the Pipe Line Company agreed to remit part of the charge of its local pipes to the railroad. Instead of a contract for rebates to the Standard, this was a contract for rebates to the railroad. The reason for this contract was that the seaboard pipe-line of the Standard did not extend beyond Hamilton, Pa.; and to compensate the railroad for its low rate of freight and for its grants of rights of way — no free pipe-line law then existing in New Jersey — these rebates were provided.

Strengthened by these mutually helpful contracts, the National Transit Company and railroads were meanwhile wearing out the Tidewater Pipe Line Company, and in 1883 forced it to cease its opposition. The company was never absorbed by the Standard Oil Trust; but on October 9, by an agreement with the National Transit Company, it agreed to accept as its share of the oil traffic 11½ per cent. of the total pipe-line transportation of petroleum to the seaboard, and was guaranteed $500,000 in annual profits for fifteen years.† With this settlement the war of the transportation agents ceased, and the Standard Oil Trust established itself in the strategic position which substantially controlled the transportation of oil to the seaboard. By the early seventies the Standard had attained the pre-eminence in mechanical efficiency which it has ever since maintained; by the agreement with the Pennsylvania Railroad in 1878 it had gained a dominance over transportation which it never since has lost; and by its contract in 1881 it made possible the completion

* Report of the Industrial Commission, 1900, i. 760–763. † *Ibid.*, 738.

of its pipe-line to the seaboard and its independence of railroads. Such contracts as the Standard subsequently made with the Pennsylvania Railroad were agreements by which the railroad got some part of the freight, though it did no part of the carrying. The Standard Oil Trust now gave rebates instead of receiving them. Over every branch of the industry, in 1883, it was supreme.

II.

1883–1892.

From the very beginning of the oil industry in Pennsylvania, movements for the restriction of oil production had been frequent. Restriction had been the aim of the Petroleum Producers' Association at its organization in 1869. The association had maintained an agency to store all oil above a certain amount and keep it from the market. This early "shut-down" failed because of the enormous production in Butler County. Succeeding "shut-downs" in 1872, 1874, 1876, and 1878, met with similar fate. In 1884 there was another general movement among producers to restrict drilling; but, through the refusal of the operators who were running large wells in the new Thorn Creek district, the movement was only partially successful. It led, however, to the organization of the Producers' Associated Oil Company, with a capital stock enabling it, when necessary, to purchase oil property in order to curtail production.*

On the 1st of October, 1887, this new organization, embracing 85 per cent. of the 14,000 producers in the oil regions, agreed with the Standard Oil Company to restrict production. From June to October the Producers' Protective Association, by various secret and public meetings, had encouraged the movement. The conditions of the industry favored the organization. The accumulated stock of oil was 31,000,000 barrels, prices were below the remunerative point, and the Standard was losing by the deterioration of oil in its store. After conference between the Standard and the associated producers,

* Report of Industrial Commission, 1900, i. 426–430.

it was agreed that the producers should restrict their production one-third during the following year, in consideration for which the Standard turned over to the producers 6,000,000 barrels of oil, at the market price at the time of the contract, and secured to the producers the profit from the anticipated rise in prices.*

By this bargain the producers immediately profited. On the oil they received from the Standard they made nine cents a gallon. Encouraged by their success, they made agreements during the next year with the Well Drillers' Union to equalize the amount of oil produced by each individual.† Although it was not possible to bring all the producers into the agreement, the price of crude oil was advanced by this restriction 29 cents per barrel. The price of refined oil to consumers was advanced about three-fourths of a cent,—an increase somewhat less than the advance in crude oil. Although the Standard Oil Company had entered into the agreement only at the urgent request of the producers, as the chief refiner it bore the burden of the advance; and when the "shut-down" was found to be injuring the laborers employed in the drilling of wells, and the Producers' Association set aside 1,000,000 barrels of oil for their relief, the Standard added another million for the same purpose. This philanthropy, in the end, proved not unprofitable. The Standard benefited by the harmony it had established; and the producers, by relieving the well drillers, prevented them from working for producers outside the agreement.

As was to be expected, the results of this movement were only temporary. In time the "shut-down" was abandoned, but not until it had gained a great though transient benefit, and had given the impulse to the building of several pipe-lines.

To the producers the Standard had come as a pacificator, restoring harmony where before had been mutual suspicion and distress. To the refiners, however, the Standard had never appeared other than a competitor, enabled by its greater size

* Investigation of Trusts, Congress, 1888, 52.

† An account of the negotiations and copies of the contracts is given in Investigation of Trusts, Congress, 1888, 52-60, 69. See also Report of the Industrial Commission, I. 429-432, 459-462.

to secure favors denied its smaller rivals. Freight discriminations, before the passage of the Industrial Commission Act in 1887, were common: all oil shippers received some rebate from the published rate, the amount varying roughly according to the favorable position of the refiner for making his bargains.* How completely proper this seemed to the railroad manager of that day, and how sound appeared the reasons on which it was based, is well illustrated by the decision of the Ohio court in 1884, in a suit brought by a firm of independent refiners against the Lake Shore & Michigan Southern Railroad to prevent the granting of rebates to the Standard Oil Company.† The rebates complained of, the court found, amounted to ten cents per barrel on all the oil the Standard shipped; but the consideration for these rebates the court found in the following fact: —

> Prior to 1875 it was a question whether the Standard Oil Company would remain in Cleveland or remove its works to the oil-producing country, and this question depended mainly upon rates of transportation from Cleveland to the market; prior thereto, the Standard Company shipped large quantities of its products by water to Chicago and other lake points, and from thence distributed the same by rail to inland markets; it then represented to the defendant the probability of such removal; water transportation was very low during the season of navigation; unless some arrangement was made for rates at which it could ship the year around as an inducement, it would ship by water and store for winter distribution; it owned its tank cars and had tank stations and switches, or would have, at Chicago, Toledo, Detroit and Grand Rapids, on and into which the cars and oil in bulk could be delivered and unloaded without expense and annoyance to defendant; it had switches at Cleveland leading to its works at which to load cars, and would load and unload all cars; the quantity of the oil to be shipped by the company was very large, and amounted to 90 per cent. or more of all the oil manufactured or shipped from Cleveland, and, if satisfactory rates could be agreed upon, it would ship over defendant's road all its oil products for territory and markets west and northwest of Cleveland, and agree that the quantity for each year should be equal to the amount shipped the preceding year; upon the faith of these representations

* Report of Industrial Commission, 1900, i. 790.

† Investigation of Trusts, Congress, 1888, 552. Schofield, Shurmer & Teagle v. Lake Shore & Michigan Southern Railroad.

the defendant entered into a contract; the rates were not fixed rates, but depended upon the general card tariff rates as charged from time to time [by which its shipments were] substantially to be carried from time to time at about ten cents per barrel less than tariff rates; in consideration of such reduced rates as to bulk oil, the Standard Company agreed to furnish its own cars and tanks, load them on switches and unload oil shipped in barrels without expense to defendant, and, by reason thereof, with less risk to defendant; and was also to ship all its freight to points west and northwest of Cleveland (except small quantities) to lake ports not reached by rail, and so to manage the shipments as to cars and times as would be most favorable to defendant. . . .

At a cost exceeding $100,000 the Standard Company had constructed the terminal facilities promised and herein found; in actual fact, the risk of danger from fire to defendant, the expense of handling in loading and unloading, and in the use of the standard tank cars is less than upon oil shipped without the use of such or similar facilities; the Standard Company commenced by shipping about 450,000 barrels per year over defendant's road, which increased from year to year, until, in 1882, . . . the quantity so shipped on defendant's road amounted to 742,000 barrels, equal to 2,000 barrels, or one full tank load per day.

Said arrangements are not exclusive, but are at all times open to others shipping a like quantity and furnishing like device and facilities.

By successive contracts, the court found, this agreement was continued in 1880, 1882, and 1883; and, in conclusion, the court declared that the evidence presented supported the contention of the Standard that the advantages secured to the Standard by its contract with the railroad were not, in the accepted sense of the term, rebates, but were an equivalent for the lowered cost of freight. In so holding, the court was but following the current judgment of the time.

But there were at that time other departures from the regular tariff rates which cannot so readily be explained. Throughout 1888 there were sudden and distressing increases in the tariff rates for oil, which seriously inconvenienced the inland refiners.* A notorious example of such charges was found in the management of the Cleveland & Marietta Railroad by its receiver in 1885. The Standard, it appears, con-

* Report of Industrial Commission, 1900, i. 157.

trolled most of the pipe-lines in the Macksburg field connecting with the several stations of the railway; and its local manager was desirous of determining a through rate on oil from the well to Marietta. Accordingly, he arranged with the receiver of the railroad that the rate be 35 cents per barrel, and that the railroad should collect this rate and pay over to the Standard 25 cents for pipeage. This agreement was put in writing, and forwarded for approval and execution to the Standard Oil Company. Meanwhile the receiver raised the tariff rate for oil from 17½ cents to 35 cents for all shipments made over his line, with the result that one refiner, carrying his crude oil from the well to the station by his own pipe-line, was forced to pay 35 cents freight, of which 25 cents was at once to be turned over to his competitor, the Standard Oil Company, for pipeage which it had never rendered. Whether the cost of pipeage warranted so large a proportion of the through rate going to the Standard is a question which cannot be answered off-hand. The indefensible method of collecting the combined pipeage and freight charges was more plain. The Standard Oil Company never carried this contract through, but sent it back to its manager with instructions to end the arrangement and refund to the shippers the amount of these wrongful rebates before suit was brought to remove the receiver.*

A more typical example of the rebates of this period is the contract between the National Transit Company and the Pennsylvania Railroad. According to this agreement the Transit Company, which was the transporting agent of the Standard Trust, agreed that, if out of the total amount of oil shipped to the seaboard the Pennsylvania Railroad should not have moved 26 per cent., the Transit Company should ship by the Pennsylvania Railroad the amount required; and the railroad should be entitled to one-half the current rate thereon. By another contract of the same date it was provided that, if the railroad company preferred, the Transit Company itself would carry this extra quantity, and would then pay to the railway freight on the oil thus carried by

* Report of Industrial Commission, 1900, 1. 536–539.

itself, after deducting 6 or 10 cents a barrel as compensation for pipeage. In return for these stipulations it was agreed that all joint rates from any delivery point of the local pipe-lines to any refining or terminal point should be fixed by the railroad in concurrence with the Transit Company; and at the time of the agreement this rate was fixed at 45 cents to the seaboard.*

The advantage to the railroad, under this agreement, is manifest. Throughout the continuance of this contract, which was the last one made and continued till 1887, there was a regular deficiency in the share of the oil to be carried by the railroad, amounting in some months to 80,000 barrels and settled by payments of the Transit Company to the railroad.† Essentially, it was a contract of rebate to the railways rather than of rebate to the Standard, the motives of which were similar to the contract of 1881. It was a payment to the railroad in compensation for grants of rights of way. Other pipe-lines could not get through to the seaboard because they could not make terms with the railroads. The advantage accruing to the Standard from such a contract as this was good will, of which it stood at that time in great need. "The pipe-line was then completed to the seaboard," explains Mr. Dodd, solicitor of the Standard.† "It could not have reached that point without the consent of the railway company, as no free pipe-line law then existed in the State of Pennsylvania. It was still necessary to have a traffic contract with the railroad to deliver oil to the railroads at different points on the through line." Clearly, the injustice of this contract, if any there be, should be laid at the door of the railways. To them, rather than to the Standard, did the greater benefit accrue. And if this contract, by providing that joint rates for the transportation of oil should be fixed by the railroad in concurrence with the Transit Company, opened the way to such abuses as the sudden and arbitrary raising of rates at less important shipping points not used by the Standard, the blame belongs rather with the railroad than with the Standard Oil Company.

* Report of Industrial Commission, 1900, i. 663–666. † *Ibid.*, 761.

The passing of the Interstate Commerce Act, in 1887, makes a natural division in the record of the railroad arrangements made by the Standard. By the terms of that act, discriminations were forbidden, and such contracts with shippers as had been the rule since the late 60's were made illegal. The Interstate Commerce Act seems to have been observed by the Standard Oil Company. "Little testimony," says the Industrial Commission of 1900, "was brought forward to prove that it still actually receives lower rates for shipment over the same tracks than its competitors." * In the testimony before the commission, on this latter point, the opinion was expressed by witnesses testifying in opposition to the Standard Oil Company that direct discriminations and rebates are still received by the Standard; but the evidence adduced in proof of this opinion was unsatisfactory, and was considered entirely inconclusive by the commission.†

* Report of the Industrial Commission, 1900, i. 158.

† *Ibid.*, 159.

Apart from hearsay the only evidence produced to prove the existence of discrimination in favor of the Standard were the letter of the receivers of the Baltimore & Ohio Railroad to the Interstate Commerce Commission, December 22, 1898, and the case of Logan, Emery & Weaver vs. the Pennsylvania Railroad Company.

The letter of Receivers Cowen and Murray states: —

"Within the territory north of the Ohio River and east of the Mississippi the railroad carriers are transporting the larger part of the interstate traffic at rates less than those shown in the published tariff filed with your commission, which are by statute the only lawful rates.

"While this condition continues, there will exist the unjust discriminations between persons, localities, and particular descriptions of traffic, the prevention of which is the main object of the act of establishing your commission. Only by securing the uniform charging of the published rates can the just quality of service and of charge required by law be secured either between persons or between localities." (637.)

This letter doubtless sets forth a deplorable fact, but how it relates to the case of the Standard is not clear.

The Logan, Emery & Weaver case was brought in 1887 and continued until 1890. The president and the general freight agent of the Pennsylvania Railroad both testified in 1890 that positively no rebates had been paid since 1887. But the auditors and assistant auditors of the road testified that rebates from 8 to 28 cents per barrel had been granted since 1887. From the facts of the case it appears that the Standard Oil Company was in no way concerned. Indeed, in the evidence, as cited by witnesses testifying in opposition to the Standard, the chief recipient of the rebates was the Bear Creek Oil Refining Company, with which B. B. Campbell, originator of the Petroleum Producers' Union, was associated. Mr. Campbell testified that from October 1, 1884, until July 1, 1888, his company had received rebates on shipments from Coleman Station to Philadel-

In other ways than by discriminations in actual rates the Standard Oil Company, after 1887, secured special advantages in transportation. The shipments of oil from those localities which it chose for distributing points were so large that the freight rates for that locality were naturally most favorable to this chief commodity of shipment. Competitive points, points where several railroads compete, or where water transportation competes with the railways, were generally fixed upon as distributing centres. Accordingly, lower freight rates prevailed at the large shipping points of the Standard than prevailed at places where its competitors made most of their shipments. The Standard Oil Company located its refineries at points nearer the place of consumption, and so economized in shipping distance. Thus it transferred most of its business from Cleveland to Whiting, Indiana, in order to be nearer the Southern market and to the West, and began to supply the Eastern market from its refineries at Bayonne, New Jersey. By wise distribution of its refineries the Standard became largely independent of the changing freight rates that distressed those independent refiners who shipped their oil long distances.* A less honorable advantage, it has been alleged, accrued to the Standard by the practice, among the railroads, of under-billing the weight of the contents of the tank-car. As to interstate shipments, this has been specifically denied by representatives of the Standard Oil Company; and the

phia, Communipaw, and Bolivar, amounting in all to $48,101. The case was settled out of court, as the plaintiffs were too poor to carry the suit further. A settlement was accepted, according to which the railway paid $35,000 and the costs of the suit. (633, 635, 660.)

This reported case, the only documentary evidence directly relating to discriminations in the oil traffic, explicitly excludes the Standard Oil Company, and incriminates only a leading independent refiner.

Replying to these charges, Mr. Archbold, vice-president of the Standard Oil Company, submitted letters from officers of leading railways of the country in reply to a circular inquiry sent out by the Standard Oil Company, asking whether the respective roads had granted any advantages to that company, "either by direct tariff, rebate, under-billing, or in any other way." These letters specifically deny that any such preferences have been given to the Standard Oil Company, and many of them further state that the Standard Oil Company has used its influence with the railways to maintain agreed tariff rates and to support the Interstate Commerce Act. (515–528.)

*A vast amount of evidence bearing on this point is summarized in Report of the Industrial Commission, 1900, i. 161–163.

instances where such under-billing has occurred are explained as occasional errors.*

Immediately after the passage of the Interstate Commerce Act and the creation of the Interstate Commerce Commission the relative charges and advantages of tank and barrel shipments were brought in issue. Prior to 1888 it was universal to charge lower rates per 100 pounds for oil in tanks than for oil in barrels; but in 1888 the Interstate Commerce Commission ordered that the rates on oil in tank-cars and in barrels should be the same, the weight of the barrels being included in the weight charged upon. The railways complied generally with the order of the Interstate Commerce Commission; but later, when the independent refiner secured an order from the commission that the weight of barrels should be disregarded in charging for shipments of oil, the railways refused to comply with this order or to pay the damages assessed in reimbursement of the charge made for the weight of the barrels.† As to the relative advantages of tank-cars and barrels, and whether a relatively lower charge for oil in tank-cars than for oil in barrels is justifiable, there was much disagreement. The tank-car, it appears, is always unloaded by the consignee and loaded by the shipper; while the contrary is usually true with barrels. The barrel, it was urged, should not be carried free of charge, because it is a merchantable article, and its value is added to the price of the oil sold. On the other hand, the box-car in which the barrels are shipped can contain a return load, while the tank-cars must be returned empty.‡ The Standard is the largest shipper by tank-cars, and owns most of the tank-cars in use. It gains not only such advantages as are given to shippers by tank-cars, but also the mileage of three-fourths of a cent per mile which is paid by the railways for the use of its cars.§

With nothing more exciting than an occasional case before

* Evidence bearing on this point is digested in Report of the Industrial Commission, 1900, i. 165.

† "A case raising this point is pending before the United States courts." Report of Industrial Commission, 1900, i. 788.

‡ This question is discussed by the Interstate Commerce Commission in the following cases: i. 503, 722; ii. 389; iii. 186; iv. 223; v. 193, 660.

§ Report of the Industrial Commission, 1900, i. 167–170.

the Interstate Commerce Commission regarding shipments by tank-car, the Standard Oil Trust continued from 1887 until 1892. Its growth and prosperity had been steady. The property of the various companies that entered the trust in 1882 was valued at $75,000,000. In 1892 the value was estimated at $121,631,312; and 50 per cent. of this increase had come from profits invested and the remainder from additional capital subscribed.* The dividends meanwhile had risen from 5¼ per cent. in 1882 to 12 per cent. in 1891. During the ten years following 1882 there had been a gentle decrease in the price of refined oil, and a slight decrease in the difference between the price of refined and the price of crude oil,—a difference which measures the charge for refining.† The attitude of the Standard Oil Trust during these years was one of quiet dominance. It was now to meet an unexpected difficulty in the courts, which rendered necessary a complete change of organization.

III.

1892 TO THE PRESENT.

In 1891 the State of Ohio, by its attorney-general, began action to oust the Standard Oil Company of its corporate rights, on the ground that it had abused its corporate franchises in becoming a party to an agreement against public policy. The petition averred that in "violation of law and in abuse of its corporate powers and in the exercise of privileges, rights, and franchises not conferred upon it," the defendant company had become a party to the trust agreements of 1882. "All the owners and holders of its capital stock, including all the officers and directors of said defendant company, signed said agreements without attaching the corporate name and seal." Prior to the dates of the trust agreement aforesaid, the petition continued, the defendant's capital stock consisted of 35,000 shares. Upon the signing of said agreements, 34,993 shares of said stock, belonging to the persons

* Statement of Mr. S. C. T. Dodd, Report of the Industrial Commission, 1900, i. 799.

† *Industrial Combinations and Prices*, by J. W. Jenks, Report of Industrial Commission, 1900, i. 52.

who signed the agreement, were transferred upon the defendant's books to the nine trustees appointed and named in the agreement, by virtue of which "the nine trustees have been, ever since the signing of said agreements, and still are, able to choose and have chosen annually such boards of directors of said defendant company as they (said nine trustees) have seen fit, and are able to and do control the action of the defendant in the conduct and management of its business." *

In answer to this petition the Standard Oil Company denied that it had become a party to either of the agreements in said petition set forth, or that it had at any time observed or carried out those agreements. "Said agreements," continued the answer, "were agreements of individuals in their individual capacity and with reference to their individual property, and were not nor were they designed to be corporate agreements, and defendant denies that said agreements have illegally affected its corporate capacity or that defendant has permitted its corporate powers, business, and property to be exercised, conducted, and controlled in an illegal manner." †

By a demurrer to the defendant's plea the issue was squarely raised whether the act of all the stockholders, officers, and directors of a corporation may rightly be called the act of the corporation. "It seems to us," the plaintiff argued, "impossible to read the agreement and consider the proceedings which confessedly have taken place under it, without reaching the conclusion that there has been a studious design and effort on the part of the promoters of the trust scheme to obtain all the advantages of the actual presence and participation of the defendant corporation in the objects and purposes of the agreement without formally making it a party to it. But is substance to be sacrificed to shadow? Have we not shown sufficient actual corporate conduct to obviate the necessity for formal corporate action, such as the adoption of resolutions or the signing of a name?" ‡

The court adopted the argument of the plaintiff, and in its decision handed down March 2, 1892, based its rule on substantially the following reasons: —

* State *ex rel.* v. Standard Oil Company, 49 Ohio St. 138–155.
† *Ibid.*, 155–158. ‡ *Ibid.*, 163.

A corporation, apart from the persons who compose it, is, by the fiction of the law, to be regarded as a legal entity only for convenience in the transaction of its business. When all, or a majority of the stockholders' corporation, do an act which affects the property and business of the company, and which, through the control their numbers give them over the selection and conduct of the corporate agencies, does affect the property and business of the company in the same manner as if it had been a formal resolution of its board of directors, and the act so done is *ultra vires* of the corporation and against public policy, the act should be regarded as the act of the corporation, and, to prevent the abuse of the corporate power, may be challenged by the State. The trust agreements in question are acts which must be regarded as the acts of the corporations, and, as such, *ultra vires;* and, tending as they do to the creation of a monopoly, to the control of prices as well as of production, these acts are also against public policy, and accordingly contrary to law.*

The place this case occupies in the law of corporations is of the first importance. A previous case, in which the Sugar Trust was defendant,† had decided that an agreement of associations to which the corporations were party was *ultra vires*. Further than declaring partnership of corporations illegal, however, the law had not yet gone; and upon the question whether such combination was illegal, because in restraint of trade and opposed to public policy, the court had declined to express an opinion. In the instance of the Standard Oil Company the court made a bold advance: it not only forbade members of several corporations to combine as such and merge their interests in a trust, but it also declared such combination a restraint of trade, illegal, and quite opposed to public policy, and by the force of its decision put an end to the trust as a form of business combination.‡

Accordingly, in 1892 the Standard Oil Trust was dissolved, and the separate establishments and plants reorganized into twenty constituent companies. The trust certificates, when surrendered, were replaced by a proportion of the shares of each company, properly divided. By the form of transfer

* 49 Ohio St. 176-189.

† People v. North River Sugar Refining Co., 121 N. Y. 582.

‡ S. C. T. Dodd, "The Present Legal Status of Trusts," 7 *Harvard Law Review*, 157.

adopted, the trustees placed in the hands of their attorney the amount of shares held by the trustees in the several companies of the trust, and authorized the attorney to secure from each of these companies transfer upon their corporate books of stock certificates for whole shares, and scrip for fractional shares thereof. Although the trust was formally dissolved, the men who were the trustees hold a majority of the stock in all the different companies which composed the trust, so that they work together as harmoniously as before. The replacement of trust certificates by proportional shares of stock in the separate companies continued slowly, and is not yet complete. Substantial unity of action among the several companies was not changed.*

Since the agreement between the Tidewater Pipe Line Company and the National Transit Company, 1883, by which the Standard "Alliance" had attained the dominant position in the transportation situation, there had been few attempts on the part of the independent producers to build pipe-lines. Under the impulse of the agreement among the producers and the Standard, in 1887, to restrict the production of oil, the Producers' Oil Company, Limited, had been organized and a pipe-line built from Titusville and Oil City to the new McDonald oil field. But this was a local pipe-line; and was speedily absorbed by another company, the Producers' and Refiners' Oil Company, in which independent refiners as well as producers were interested. In 1890 occurred the first attempt, on the part of the independent refiners, to build to the seaboard a pipe-line which should afford them transportation

*Precisely what may be called a "monopoly in restraint of trade" the courts have not clearly decided. Indefinite increase of business, the fixing of arbitrary prices, and the agreement not to trade with any one that trades with others than the covenantors have all been held not to be "monopoly" under the federal anti-trust act. On the other hand, American courts have held that the fact that "monopoly" has cheapened prices will not be considered, and that it makes no difference whether the monopoly be created by "contract" or "patent": the people, they declare, ought not as a body to be employees and servants. A "monopoly" need not be "permanent" or "complete": it may exist even if the article be susceptible of "indefinite production," and occurs when there is a "limitation" of "competition" and "production" with a view to 'advance prices." (Cases are collected in 7 *Harvard Law Review*, 348-355.)

facilities equal to those of the Standard. With this aim in view the United States Pipe Line was projected.

The prime mover and first president of this company was Mr. Lewis Emery, an independent refiner in Bradford, Pennsylvania. To avoid heavy transportation charges, he had determined in 1890 to build a pipe-line to the coast; and, pending the further extension of his line, he had gone to the president of the Reading Railroad to secure a contract for transporting oil by that railroad from Williamsport, Pennsylvania. He was unable to make satisfactory terms, and, accordingly, determined to lay a pipe-line along the boundary of New York and Pennsylvania to Hancock, New York, and to secure a contract with the New York, Ontario & Western Railroad for transporting oil to the Hudson, with a right to construct a pipe-line later along its tracks. This contract was secured, and straightway the task of getting right of way for the pipe-line was begun.

Immediately the usual obstacle appeared.* The opponents of the new company began to seek the right of way over the same route. They bought mortgages against pieces of land along the route, to induce the owners to give them another right of way. They bought strips of land crossing the projected route. The railroads, also, proved unsympathetic. When an attempt was made to lay the pipe-line under the Erie Railroad at Bradford, it was opposed by force and later prevented by injunction from the courts. Another attempt to cross the Erie at Hancock met with similar fate. As a result, the pipe-line had to be constructed back seventy miles to the Susquehanna River, and built from Athens to Wilkesbarre. The crossing of every railroad brought on a legal contest; and, before Wilkesbarre was reached, $150,000 had been spent in litigation.†

These vexatious delays were not different in degree or kind from those met by any railroad or pipe-line in the securing of its right of way. In almost every case they were due to the desire of land-owners and speculators to extort from the constructing company a high price for what the company absolutely

* Report of the Industrial Commission, 1900, i. 445, 486.

† Testimony of Mr. Emery, Report of Industrial Commission, 1900, i. 650-655.

needed. The National Transit Company, no less than the United States Pipe Line, had met these difficulties.* In the instance of the United States Pipe Line Company the motive for the opposition of the railroads was clearly the desire to preserve the great advantages in the oil traffic which their contract with the National Transit Company had secured them. The Standard Oil Company, it appears, was not engaged in these obstructionary tactics: for the very sufficient reason, indeed, that the projected pipe-line much more vitally concerned the interests of the railroads than it did those of the Standard.

For some time the pipe-line transported oil from Wilkesbarre by rail over the New Jersey Central Railroad. It then sought to continue its course to the seaboard. It crossed the Pennsylvania Railroad by purchasing an acre of land. When it reached the Delaware, Lackawanna & Western Railroad, it bought a farm in Washington, New Jersey, over which the railroad crossed, hoping that it might lay a pipe-line under the culvert. One Saturday night it laid its pipes, and stationed an armed force of 50 men to protect them. Next Monday two wrecking-cars of the railroad, with 250 men, rode in from Hoboken, and attempted to oust the employees of the pipe-line company. Resistance was made; and, to compromise the matter, it was arranged that men on each side should be arrested, in order to make a peaceable legal fight in the courts. But, while these proceedings were going on, a couple of locomotives were brought up by the railroad, and hot coals, hot water, and stones were thrown into the culvert. Finally, the railroad employees were driven away, and the pipe-line employees secured rifles, and held possession of the field for seven months. The lower courts decided in favor of the pipe-line; but, after four years of litigation, the Supreme Court of New Jersey decided that the pipe-line must be removed.

Eventually, the United States Pipe Line will build to Philadelphia. Meanwhile it transports its oil from Washington, New Jersey, fifty miles over the New Jersey Central Railroad of New York,† at a rate much lower than the Standard has ever received for like distances. According to the contract between

* Report of the Industrial Commission, 1900, i. 445, 486. † *Ibid.*, 650-655.

the railroad and the Pipe Line Company, crude oil is carried 52½ miles at the rate of $7.93 per tank-car, containing twenty tons; and the railroad returns the empty cars free. The contract is for one hundred years, and may be abrogated by the pipe-line upon five years' notice, the railroad having no right to abrogate it.*

Meantime the Standard Oil Company bought a large proportion of the stock of the Producers' Oil Company, with a view, as it would appear, to securing a controlling voice in its management; but it was so opposed in its ownership that it transferred its shares to a certain Mr. John J. Carter. Mr. Carter brought suit to be allowed to vote his stock; but, as the organization was a limited partnership, the courts upheld the company in denying him admission.† With the United States Pipe Line Company the National Transit Company was more successful. It secured $383,000 out of a total of $1,119,000 of stock; and, after permission to attend the meetings of the company and to vote the stock had been refused by unanimous vote of the other stockholders, the courts decided in favor of the National Transit Company. The purchase of stock was made, says Mr. Archbold, "with a view to having such knowledge as we could have rightfully through such ownership — as we should acquire in the progress of the affair"; ‡ and this information the National Transit Company gets from its one director upon the board of the United States Pipe Line Company.§

To prevent the Standard Oil Company from obtaining control of these independent organizations, the Pure Oil Company was projected in June, 1895, to secure control of the other independent companies. In 1897 the Pure Oil Company was organized as a New Jersey corporation with authorized capital stock of $1,000,000, of which $377,000 has been paid in. The business of the company has been marketing refined oil, especially in Germany; and it has proposed to increase its capital to $10,000,000.‖ In its structure this company is curiously like the former Standard Oil Trust. The holders of 66,000 shares in the company, being more than a majority, vest the voting

* Report of Industrial Commission, 1900, i. 513, 529. † *Ibid.*, 270, 577.
‡ *Ibid.*, 577. § *Ibid.*, 656. ‖ *Ibid.*, 261.

power of such shares in fifteen persons for twenty years; and it is agreed that one-half of all shares hereafter subscribed shall similarly be transferred to the trustees. The ownership of the shares may be transferred, but purchasers have no rights other than those provided by the trust agreement. The trustees are to vote as a unit, to the full number of the shares they hold, at the election of directors. One-third of the trustees retire annually, and their successors are elected by the general stockholders. By a vote of three-fifths of both classes of stockholders, on the redemption of the preferred shares at $110, the trust may be cancelled.* The formation of the voting trust, it was claimed, was made necessary by the attempt of the National Transit Company to secure control through the purchase of shares of the Producers' Oil Company and the United States Pipe Line Company. In order to keep the control of the latter company in hands friendly to the independent interests, there was devised a voting trust agreement, according to which the signers vested their interests in the stock in a certain Mr. A. D. Wood as trustee for five years from the 1st of April, 1893, unless sooner terminated by a vote of three-fourths of the stock so held in trust. Mr. Wood was allowed full power to elect officers, but was bound to vote for persons interested in the business as independent refiners.† It is the purpose of the Pure Oil Company, at the expiration of this trust agreement, to anticipate any attempt of the Standard Oil Company to control the company.

While the independent refiners have been seeking security in the trust form of organization, the Standard Oil Company has adopted the contrary policy. In 1892 the trust dissolved into its constituent companies, the former trustees holding a majority of the stock in each corporation and the holders of trust certificates exchanging them for the stock of the several companies in agreed proportion. By purely informal harmony, a unity of action among these corporations was maintained. A large quantity of trust certificates were still outstanding; and the dividends, when declared, were at a certain

* A copy of the trust agreement of the Pure Oil Company is given in Report of the Industrial Commission, 1900, i. 466–470.

† Report of the Industrial Commission, 1900, i. 110.

percentage upon these outstanding certificates and at a properly adjusted rate upon the capital stock of the different companies, so that the rate of dividends might be considered as if it were entirely on the trust certificates at their former full amount. In order to secure more complete unity and to provide for the claims of smaller holders of trust certificates, the Standard Oil Company was organized under the laws of New Jersey in 1899. This corporation, though practically a new organization, was in form a continuation of the old Standard Oil Company of New Jersey, with an amended charter and capital increased from $1,000,000 to $110,000,000. This corporation was authorized to own the stock of any of the different corporations connected with the Standard Oil Company, and to buy from all parties who own such stock whenever they desired to sell.* "The new Standard Oil Company of New Jersey," said the Industrial Commission in 1900, "has recently been formed with the intention of transferring the stock of the different corporations into the stock of the new company, so that, when the transfer is finally made, one single corporation, the Standard Oil Company of New Jersey, will own outright the property now owned by the separate companies which are commonly known and mentioned together under the name of the Standard Oil Company. This combination at present has no formal unity. It has a practical unity as great as it will have probably after the complete change into the New Jersey company is effected."† Since 1900 about $97,000,000 of the capital stock of this company has been used to purchase at par the stocks and properties of the other Standard companies, the capitalization of which was approximately $97,000,000, but whose good will and earning power, as represented by the market value of the stock, aggregates $650,000,000.

Interesting as they are, the particular forms which the corporate organization of the Standard and of its competitors assume are the least important phase of their competition. The progress of both the Standard and the independent companies has been most marked in recent years in foreign countries. To place

* A copy of the charter of the company is given in Report of the Industrial Commission, 1900, i. 1223.

† Report of the Industrial Commission, 1900, i. 11.

American oils in Eastern markets has required constant cheapening of production and transportation. An immense outlay for additional pipe-lines, more and larger steamers for ocean transportation, and the adoption of the tank-car and tank-wagon system of delivery have been made necessary, so that to-day crude oil is carried almost exclusively by pipe-lines, railroad transportation is confined to the products of crude oil, and the Standard has no arrangements apportioning to the railroads any share of the crude oil traffic. At present it is in its methods of marketing, by which it meets competition at home and abroad, that the real interest lies.

Until 1895 the sale of crude oil by the producers had been on the exchange at Oil City. Throughout the 80's the market in the exchange had been wildly speculative, but, gradually, less and less oil came to be sold on exchange; and, finally, on January 23, 1895, the Seep Purchasing Agency of Oil City, on behalf of the Standard Oil Company, posted a notice that thereafter the prices paid by it to oil producers "will be as high as the market of the world will justify, but will not necessarily be the price bill on the exchange for certificate oil." The Seep Purchasing Agency purchases for the Standard Oil Company 80 per cent. of the crude oil produced in Pennsylvania and Ohio, and by its action it fixes the price of crude oil in the oil regions. "We have before us," says Mr. Archbold, "daily the best information obtainable from all the world's markets as to what the offerings are and as to what it is possible to sell for; and we make from that the best possible consensus of prices, and that is our basis for arriving at the current price." * In the period from 1895 to the present, it may be added, the difference between the price of crude oil and the price of refined oil has remained almost constant,† which shows that this power of fixing the price of crude oil has not been abused, in spite of the fact that the Standard Oil Company during these years refined over 80 per cent. of the output of oil.‡

* Report of the Industrial Commission, 1900, i. 571. See also 142, 143.

† *Industrial Combinations and Prices*, by J. W. Jenks, in Report of Industrial Commission, 1900, i. 53.

‡ Report of the Industrial Commission, 1900, i. 560.

By its control of the pipe-line systems the Standard Oil Company maintains its advantage over the independent refiners of the oil regions. The practice of the pipe-line companies is to receive all oil produced in the wells with which their pipes are connected, gauging the amount and recording the quantity received from each producer. The producer may then receive from the company at any time the value of his oil in store at the price for that day, or, instead, may receive pipe-line certificates which are negotiable in the open market. The company lays pipes without extra charge to new wells, though they be fifteen or twenty miles distant. In the proper management and extension of the pipe-lines, more than in any other branch of the business, is the necessity for large investments of capital apparent.* In the early days of the industry the absence of these facilities completely demoralized the business; and for the adequate management of the lines no company except the Standard has been ready and able to make the necessarily enormous investment of capital. With their scant resources the smaller companies were unable to respond to the slightest sudden demand for new facilities. The superiority of the Standard Oil Company, in this particular, was clearly shown in the sudden development of the McDonald field in 1891. In July of that year the output of the McDonald field was 3,000 barrels daily. By the middle of August it had reached 15,000 barrels. By the first of September the Standard Oil Company, through its ally the National Transit Company, was able to handle 26,000 barrels a day; by the first of October it could handle 40,000 barrels a day; and, when in November the production of oil reached nearly 80,000 barrels per day, the capacity of the pipe-lines had risen above that figure. Iron tankage of the capacity of 3,000,000 barrels was erected during these months, and fifty-three miles of pipe laid in a territory of twelve square miles.† Had the National Transit Company, with its $30,000,000 of invested capital, not been in control, it may be seriously doubted whether local enterprise could ever have effected so remarkable an extension of pipe-lines in so short a time.

Associated with its advantages in transportation is the

* Report of Industrial Commission, i. 799, 285, 553. † *Ibid.*, 471-475.

advantage the Standard Oil Company has in distributing its refineries in strategic locations. Not only is a saving in transportation charges thus effected, but advantages accruing from cheaper land, labor, and fuel, are also secured. To gain this economy, the Standard Oil Company spent millions in new plants near New York and Philadelphia.* It bought the entire output of the refineries in the newly discovered oil region in Colorado,† and secured control in 1898 of 75 per cent. of the refining business in Canada;‡ and for the same purpose it has recently rebuilt refineries in Pennsylvania, in order to profit by the cheapened fuel.*

The vexed question of the effect of the Standard Oil combination on the price of refined oil will probably never be settled. Opponents of the Standard Oil Company declare that the Standard has not reduced the price of refined oil as compared with crude oil to any such degree as would be the case under open competition. The effect of the combination, they point out, is to be gauged only from the margin between the prices of refined and crude oil; and the reduction of this margin, though steady, is, in their opinion, by no means commensurate with the improvements in the processes of refining.§ In reply, Mr. Archbold of the Standard Oil Company has declared that his company is unable permanently to exact excessive prices. Temporarily, it might have such power; but, if it used this power arbitrarily, it would provoke heavier competition. There is, he admits, a certain amount of monopolistic power, coming from the aggregation of capital itself, which keeps prices higher than they would be under severe competition; but, at present, this power and its effect upon prices are very slight, and the lessened cost of doing business on a large scale more than compensates in lowered prices for the slight monopolistic power of getting higher prices.‖ Perhaps the most significant criticism which the independent refiners pass upon the price which the Standard Oil Company gets for its

* Report of the Industrial Commission, 1900, i. 649.

† *Ibid.*, 384. ‡ *Ibid.*, 673.

§ In the chart accompanying Professor Jenks's report on *Industrial Combination and Prices* this margin is graphically shown. Report of Industrial Commission, 1900, i.

‖ Report of Industrial Commission, 1900, i. 569, 570.

oil is that the improved methods of utilizing by-products in recent years have made by-products as remunerative as the refined oil itself; and yet the margin of price between refined oil and crude oil during this period has only slightly decreased The statement has frequently been made that the Standard has reduced its prices in the territory of its competitors, and maintained prices at more profitable rates at non-competitive points.* Such a practice, as an instance of ordinary business competition, is not extraordinary. A similar charge could be brought against most large businesses; and, as those who bring the charge seldom take into account the varying cost of transportation to markets of varying means of communication, small probative value can be attached to their bare statement of difference in price. Of more serious nature are the charges that the Standard Oil Company suborns the employees of its competitors to secure information as to their shipments and customers, and that it resorts to unfair tests and adulteration of its oils and to the copying of brands with the design to deceive purchasers. On all these points the evidence is at best vague and inconclusive. The officials of the Standard Oil Company testify that it is their practice to ask their salesmen to keep their eyes open, and to inform the company as to those from whom different dealers are buying; but they flatly deny the charge of suborning the employees of their rivals, and very conclusively explain away the charge of fraud in the copying of brands and in the tests and adulteration of their products.† The energy of the Standard Oil Company, in developing new departments of the industry, and its enterprise in undertaking the production of all the chemicals and materials incidental to the process of refining, has been recognized, even by independent refiners, as truly great, and quite beyond what smaller competitors could have attempted.‡ The leading by-products are gasoline, naphtha, paraffine, lubricating oils, and vaseline products. In addition to these, fully 200 other by-products are extracted and used for medical purposes and for aniline

* A mass of evidence bearing on this point is digested in Report of the Industrial Commission, 1900, i. 112–117.

† Report of Industrial Commission, 1900, i. 118–127.

‡ Lewis Emery, Report of Industrial Commission, 1900, i. 627.

dyes. To utilize all these by-products requires the greatest specialization of methods, encouragement of invention, investment of capital, and extension of plant. A refinery of a capitalization of $500,000 cannot realize such economies.* The undoubtedly large profit accruing to the Standard Oil Company from the utilization of by-products is owing entirely to its superior mechanical efficiency and organization.

Aggregation of capital has brought to the Standard Oil Company its greatest advantage in the development of foreign trade. In its contest on the Continent, and especially in Russia, with the great oil interests of the Rothschilds, of the Nobel Brothers, and of prominent England capitalists, its success has been entirely due to its great capitalization. Since 1871 the export of petroleum products has increased seven times, and of the present exports the Standard Oil Company ships 90 per cent.† In Russia the competition between the Standard and the Nobel Brothers is keen. The price of Russian crude oil is lower than that of American oil; and the Nobels are at present shipping it in tank steamers to India, China, and Japan. To meet this competition, the Standard Oil Company has established agencies all over the world, and has built bulk-tankships for transporting its product. With the exception of the trade in the Far East, where Russian competition is especially keen, the export price of oil has always been kept above the American price.‡

The present position of the Standard Oil Company is one of abundant prosperity and power. It is opposed by a combination — the Pure Oil Company — which works in harmony with an independent seaboard pipe-line — the United States Pipe Line — and with 66 independent refineries. The Standard controls 90 per cent. of the export trade and 80 per cent. of the domestic trade. By its control of the pipe-line situation it has become quite independent of the railroads. By its preponderant purchases of crude oil it has been able to steady and roughly direct the course of prices of petroleum. By its advantages in locating its refineries near their several markets and in utilizing by-products it has effected enormous economies in transportation and manufacture, and increased its

*Report of Industrial Commission, 1900, i. 570. † *Ibid.*, 568. ‡ *Ibid.*, 791.

dividend from 12 per cent. in 1892,* when the Standard Oil Trust was dissolved, to 48 per cent. in 1901. The power of the Standard Oil Company is tremendous, but it is only such power as naturally accrues to so large an aggregation of capital; and in the persistence with which competition against it has continued, in the quickness with which that competition increases when opportunity for profit under existing prices appears, and in the ever-present possibility of competition which meets the Standard Oil Company in the direction of every part of its policy, lie the safeguards against the abuse of this great power.

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* Report of Industrial Commission, 1900, i. 799.

NOTES AND MEMORANDA.

COAL AND IRON COMBINATIONS IN GERMANY.

I should like to describe four representative combinations which are typical of a tendency that during recent years has come into prominence in Germany. One of these concerns, which is to occupy the major part of our attention, dates from 1893; the others date from the summer of 1900, from December, 1901, and from the latter part of 1900, respectively. The tendency to combine shows itself to-day not only in industry, but in commerce and even among consumers. We may take the Coal Syndicate of the Rhenish-Westphalian district (*Rheinisch-Westfälisches Kohlensyndikat*) as a type of the producers' combination, the Berlin Structural Steel Bureau (*Berliner Träger Kontor*) as a representative of the dealers' combination, and finally the Rhenish-Westphalian Association for the Purchase of Pig-iron (*Rheinisch-Westfälische Roheisen-Einkaufsvereinigung*) as a type of the consumers' combination. Some combinations have also formed agreements *inter se*, of which the agreement between the syndicate selling rolled wire (*Walzdrahtsyndikat*) and that producing wire nails (*Drahtstiftsyndikat*) is a good example. Let us successively consider these four typical institutions.

(1) The Rhenish-Westphalian Coal Syndicate.

The Rhenish-Westphalian Syndicate is a stock company, established in 1893 with a capital of 900,000 marks, and with its headquarters at Essen. It is controlled by a certain number of committees, "to whose decisions the members must submit"; the more important questions being considered by an assembly of mine-owners, in which each has a vote proportional to his contribution to the syndicate in 10,000-ton lots.

The members on their side pledge themselves to dispose of

their total output to the syndicate, with the exception only of quantities necessary for the private needs of the company, and amounts sold at retail in the immediate neighborhood or furnished in kind to the employees. The syndicate, in turn, engages to resell whatever coal it purchases.

At first each mine "participated" in the total sale to the extent of a quantity chosen by it and determined in accordance with its production in 1891 or 1892; but a greater "participation" may sometimes be secured if asked for at least six months in advance. In the case of new installations a special commission then studies the question from the technical point of view; but in the case of an established plant it examines, in addition, whether these extra quantities can be sold without necessitating a reduction of the existing "participations."

Let us define the real character of these "participations." They do not indicate the number of tons that the syndicate pledges itself to purchase, but merely a *proportion*. Suppose that we call A the participation of the first mine, and $A+B+C+D\ldots$ that of the totality of mines. The first member can count only on the purchase of $\frac{A}{A+B+C+D\ldots}$, the second on that of $\frac{B}{A+B+C+D\ldots}$, of the quantities sold. If it is foreseen, thanks to the system of long-term contracts, that the whole product will not be sold, the syndicate remains obliged to reduce the loss of each by $\frac{a}{100}$, in order to maintain equilibrium, "*a* %" marking the extent of the "reduction of Production" (*Betriebseinschränkung*). The first mine will deliver only $\frac{A}{A+B+C+D\ldots}\times\frac{100-a}{100}$, or $\frac{A\,(100-a)}{100\,(A+B+C+D\ldots)}$, the second, $\frac{B}{A+B+C+D\ldots.}\times\frac{100-a}{100}$, or $\frac{B\,(100-a)}{100\,(A+B+C+D\ldots)}$.

"When the mines involved are not engaged in a uniform manner, those among them which have received from the syndicate total orders to be delivered exceeding the figure of their participation must pay a premium on the superior tonnage. *Vice versa*, those mines which have received an inferior total of delivery-orders receive an indemnity for the difference."

The advisory committee of the syndicate determines the normal prices (*Richtpreise*); and the direction committee determines thereafter, according to these prices, the purchase prices (*Verrechnungspreise*) for all stocks and grades of coal of each member of the syndicate and the selling-price (*Verkaufspreise*) to each customer. The "normal prices" serve to keep the direction committee informed as to the present tendencies of the constituent firms. The purchase prices, variable according to kind and quality, are, in principle, the "purchase prices at the mines"; but "whatever the syndicate can obtain in addition, uncontested in the sales department, accrues to him who delivered the coal sold at a premium, and is entered every month to his credit."

To cover administrative expenses and possible deficits, a proportional preliminary charge is levied upon the new invoices, the rate of this charge being determined, when necessary, by the advisory committee.

(2) The Berlin Structural Steel Bureau.

The Berlin Structural Steel Bureau is composed of eleven members, selling from 90% to 95% of the total quantity of structural steel used in Berlin or in its immediate suburbs. Its field of activity is strictly limited, extending over the entire zone distant not less than 30 km. (18.75 miles) from the Dönhofplatz. Beyond this limit absolute individual liberty prevails, but within the limit the bureau alone can conclude bargains with purchasers. If an order is sent to a particular firm, it must reply that it cannot of itself dispose of even a single ton. Each infraction of this rule is punishable by a fine equal to the total price of the sale, and never less than 10,000 marks.

The "participation" figure is the average quantity that each member sold between 1897 and 1899. If any member receives an order for a quantity surpassing his participation (or share), he is obliged to indemnify the dealer who otherwise would suffer in consequence. If a person writes to the bureau expressing a desire to secure delivery from a certain dealer,

who perhaps is to erect a building for him (since constructors, as well as merchants, are members of the syndicate), the size of the orders received may permit this solution, in which case the dealer accepts and the affair causes no difficulty; but, if the figure of the orders received exceeds the dealer's share, another member is likely to be charged with the execution of the order.

The Berlin Bureau is in very intimate relations with the Bureau of Structural Steel Manufacturers at Wiesbaden.

(3) The Rhenish-Westphalian Association for the Purchase of Pig-iron.

All members of the Rhenish-Westphalian Association for the Purchase of Pig-iron renounce, in its interest, the right to buy directly in Germany or abroad any pig-iron, except some special varieties, the association serving as their intermediary.

Each member has a vote in the deliberative assemblies proportional to his consumption of 5,000-ton lots, at the maximum five.

The directors of the association receive, three months in advance, an announcement of the quantity necessary for each member, and collect offers of supply. Then, in general assembly, the association decides as to the acceptance of these offers, and, in case of need, as to the amount of pig-iron to be imported. Should it be impossible to procure the entire amount desired, a proportional distribution takes place between the members.

(4) The Combination of the Rolled Wire and the Steel Nail Syndicate.

The nature of this combination is shown by the contract which unites the two syndicates.

Art. 2. "The members of the syndicate of German wire-rollers renounce, in so far as they are not themselves members of the syndicate of German steel nail manufacturers, the right to produce steel nails. On the other hand, the members

of the syndicate of German steel nail manufacturers renounce, in so far as they are not themselves members of the syndicate of German wire-rollers, the right to produce rolled wire."

ART. 3. "The members of the syndicate of steel nail manufacturers bind themselves to buy their iron and steel wire of all kinds, in so far as they themselves do not produce such, only from the syndicate of wire-rollers."

This contract disappears only in the two following cases:

"(*a*) If a member has not received any reply to a demand for supply, sent at an opportune time one week before the commencement of the three months' period, he remains free for the following three months.

"(*b*) If a more advantageous offer comes from abroad, the member is obliged to prove this offer to the rolled wire syndicate, and to ask if it desires to deal on the same terms, whereupon, if the reply is negative, the foreign offer can be accepted. In exchange for these concessions, the wire syndicate binds itself not to sell any wire within the country to any but the houses which have adhered to the nail syndicate or will engage with it not to deliver afterward their products to non-members."

Here we have, then, two combinations, the one selling raw or semi-worked products, the other manufactured goods. The syndicate of manufacturers buy their materials exclusively from the syndicate producing them, except under special circumstances; and, on the other hand, the latter syndicate agrees not to deliver goods to those who do not belong to the association.

We have thus reviewed four currents of unequal strength. That which urges the producers to organize is the most powerful; and institutions are numerous which resemble more or less closely that at Essen. The understanding between merchants has as yet generally assumed only primitive forms; but the Berlin Structural Steel Bureau nevertheless exhibits the tendency. If the "pure consumers"— *i.e.*, the public — are almost impossible to organize, the consumers who are at the same time producers group themselves more readily and form associations with a view, not to escape middlemen, but forcibly to oppose the producers of materials. Of this nature is the

Pig-iron Buyers' Association. In some cases, however, when combinations in successive stages of an industry have contended with each other, understandings have been effected between the combinations themselves, as notably in the case of the rolled wire and the steel nail industries.

ANDRÉ E. SAYOUS.

PARIS.

"THE VARIATION OF PRODUCTIVE FORCES." A COMMENT.

Professor Bullock has performed a much-needed service, in the August number of this *Journal*, in making a fresh examination of the old doctrine of "diminishing returns." A crooked place, indeed, has been made far straighter than it was before. But, although in substantial agreement with Professor Bullock, I wish to call attention to one point, at which his treatment of the subject seems to be inadequate.

On every hand in economic phenomena we find, as De Quincey phrased it, a "Zeügos, or *yoke* of forces,"* — principles working together in pairs, and producing between them resultant movements. Thus, in respect to the general subject before us — the variations of productive efficiency — there are, on the one side, the force or complex of forces which we may call the principle of economic resistance,† and, on the other side, the principle of invention, or creative advance. And, moreover, as the outcome of the working together in combination of these two principles, there is in the long run a resultant movement, which, according as the first or the second predominates, or the two balance, we call a law of diminishing, increasing, or stationary returns,— efficiency. Obviously the law may change its character during considerable periods of time; and, obviously, during very short periods of time there can hardly be such a resultant law at all, since the principle of invention has no opportunity to exert itself. During a very short period of time (which is more or less according to the nature of the industry) there is opportunity merely to conduct an experiment in purely cumulative economic effort, demonstrating the existence of the principle of resistance, such an experiment as is described by Professor

* *The Logic of Political Economy*, chap. iii.

† The expression "economic friction," which otherwise might be graphically employed here, is already in use for a wholly different purpose, to denote all those things which prevent the formation of a perfect market, and so uniform wages, profits, or prices.

Bullock, following Marshall, on page 487. In like manner, again, under what Professor Bullock calls "static conditions,"— that is, a state of expanding capital and labor, but with the principle of invention by hypothesis in abeyance,— there can be nothing revealed but the yoke-fellow of the principle of invention working alone. This is a distinction which, it seems to me, would have added to the value of Professor Bullock's exposition.

The principle of economic resistance (imperfectly distinguished from the law which may receive its character from it) was the new thing in the classic theory of rent set forth by Malthus, West, and Ricardo. Anderson long before had given an excellent description of agricultural rent; but it was only a description, not an explanation, since it wholly lacked its proper philosophical basis,— the principle of resistance as met with both in intensive and extensive cultivation. But the classic writers erred in over-emphasizing resistance to the neglect of invention in the industry of agriculture as a whole, and so came to the making of pessimistic prophecies as to the resultant movement, which have been falsified now during a long term of years. More recent followers of the school have been slow to change their tone, apparently finding it hard to cut loose from considering the industry of agriculture by areas, or by comparatively small districts, and to perceive that under modern means of transportation it is free to range over the whole world, having recourse to new lands which are as good, or better, than the old.

On the other hand, the classic writers and their followers have been slow to recognize the existence of the principle of resistance in other industries besides the extractive industries. This has been so, apparently, in part because they have not considered problems in manufacturing and commercial production by definite areas, and in part because they had assumed in physiocratic fashion that agriculture was the "pace-setter" for general industrial society. They examined with care into the causes of the weakness of the weakest link in their chain: the other links they naïvely assumed to be infinitely strong.

In expanding industry in general, resistance is met with, it

seems to me, in three leading forms: first, in respect to obtaining and technically manipulating materials,— the necessity of resort to more difficult sources of supply of old materials and the necessity of working more refractory new materials; secondly, in respect to organization,— the difficulties of managing men, guarding against leaks, securing a proper balance of parts of a business; thirdly, in respect to marketing, which is a matter not only of expense and time in bringing old sorts of products to market and getting one's pay, but also of expense and time in supplying the market with new sorts of products as it becomes glutted with the old. Each of these forms of resistance, which may be divided into many sub-varieties, has its own appropriate sort of invention more or less offsetting it,— improvements in transportation, in the systematizing of work, in the art of advertising, etc. This is a department of economics in which, I think, more light is needed. But the only point I wish to urge against Professor Bullock is that he has failed to distinguish clearly enough between the initial principle of resistance in general and one of the resultant laws which may be the outcome of its combination with the other initial principle of invention.

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THE UNIVERSAL LAW OF DIMINISHING RETURNS. ANOTHER COMMENT.

Since Professor Bullock* has not claimed that his classification is complete, the following suggestions cannot be regarded as, in any sense, a criticism. They are intended rather as an extension of his classification. He has, in accordance with the original meaning of the law of diminishing returns, restricted its application to the amount which can be produced by varying amounts of labor and capital applied to the cultivation of a given piece of land of fixed area. It may be compactly expressed as follows: —

Acres of land.		*Units of labor.*		*Units of capital.*		*Units of product.*
If X	with	Y	with	Z	will produce	P,
then X	with	aY	with	aZ	will produce more than P, but less than aP.	

(It being assumed that a is a positive quantity greater than *1*.)

But if, instead of assuming a fixed quantity of land, we consider the broader question of the joint productivity of the three factors,— land, labor, and capital,— when combined in varying proportions, this formula can be considerably extended: —

Acres of land.		*Units of labor.*		*Units of capital.*		*Units of product.*
For aX	with	aY	with	Z	will produce more than P, but less than aP,	
and aX	with	Y	with	aZ	will produce more than P, but less than aP.	

Each of these formulæ expresses a law of diminishing returns identical with the law of diminishing returns from land, except that, in one case, labor, and, in the other, capital, is regarded as the fixed factor instead of land.

But, if we conceive of a fourth factor,— namely, "management,"— and assign to it a quantitative expression, we can still further extend the formula: —

* Cf. *The Variation of Productive Forces*, by Charles J. Bullock, in this *Journal* for August, 1902.

	Land.	*Labor.*	*Capital.*	*Management.*		*Product.*
If	X	with Y	with Z	with M	will produce	P,
then	aX	with aY	with aZ	with M	will produce more than P, but less than aP.	

Provided the limit has been reached beyond which large-scale production is less productive than small-scale production. If that limit has not been reached in the establishment in question, the formula would be: —

aX with aY with aZ with M will produce more than aP.

This would be a case of increasing returns with the factor called "management," instead of land, as the fixed factor. It would also be a case of what Professor Bullock calls the "Law of Economy of Organization." Viewed from this standpoint, the two supposed laws are one and the same.

But each of the factors named is capable of being subdivided into a large number of non-competing, co-operating groups; and the formula ought, in strictness, to be so extended as to assign a separate quantity to each such group. A given laborer, for example, only competes, in the strictest sense, with those other laborers who are doing, or are willing to do, the same kind of work that he is doing. All beside these are co-ordinating their efforts with his, and increasing the effective demand for his labor. Other things equal, the more there are to do his kind of work, the less value he can produce, and the worse it is for him; but the more there are to do other kinds of work, the more value he can produce, and the better it is for him. It is quite as much to his advantage that there should be an increase in the supply of other kinds of labor as that there should be an increase of land or capital, provided this increase in other kinds of labor does not cause such a shifting about of laborers as to increase the number in his particular group. The same rule will apply to different forms of capital or different kinds of land. This is the identical law which has long been called the law of diminishing returns from land, except that, in this case, any particular form of labor, land, or capital, is regarded as the fixed factor, all other factors being regarded as variable. This extension of the law of diminishing returns is essential to any complete theory of distribution.

T. N. Carver.

THE RESERVES OF THE NEW YORK BANKS.

The *Commercial and Financial Chronicle*, since July, 1900, has published, alongside of its weekly bank statement, the percentages of reserves to deposits held by each of the particular banks belonging to the New York clearing-house; and an examination of these figures, which are now conveniently available for a period of two and a half years, reveals certain interesting facts.

The provision of the national banking law which requires the national banks of New York City to hold a reserve equal to 25 per cent. of their deposits has, in reality, come to be thought of as applying to the aggregate reserves and deposits of the associated banks as a whole; and any near approach to that minimum in the weekly aggregate report invariably causes anxiety. One might not unnaturally suppose from the fact that 17 of the associated institutions are organized under State laws, and are not legally subject to the 25 per cent. requirement, that the total reserves of all the banks, National and State together, might sink somewhat below the minimum prescribed for the national banks without exciting alarm; but this does not seem to be the case. The 25 per cent. boundary has been overstepped only three times within the last decade,—in the summer of 1893, in November, 1899, and in September, 1902; and the situation each time has caused serious unrest, and has called forth heroic means of remedy. Twenty-five per cent. thus seems to have become the effective minimum required by public opinion, if not by the law, for the aggregate reserves of the reporting banks. This fact is further attested by the regular employment of the phrases "legal reserves" and "surplus reserves" in the financial columns of the New York papers in discussing the clearing-house totals.

Such being the case, it is curious to find that during the 104 weeks between January 1, 1901, and January 1, 1903, on the average, the reserves of 23 of the 59 banks quoted in the

clearing-house returns fell short of the 25 per cent. minimum, and that during 12 of these weeks more than 30 of the banks were short. During one week there were as many as 35, at no time fewer than 15 banks with short reserves. As there were only 17 State banks connected with the clearing-house, this would seem to indicate that some of the national banks were almost always to be found below the Comptroller's minimum.

We may say, then, that, as a general rule, throughout the past two years considerably more than a third of the New York banks have held reserves below the level which public opinion regards as an untrespassable minimum for the banks as a whole, and during at least three months half or more of the banks have been in this condition. There were few weeks in which the reserves of some of the banks did not average below 20 per cent.; and this was several times true of national banks as well as of state banks,* while occasionally the reserves even fell below 15 per cent.†

Inasmuch as the aggregate reserves during the two years, were, with the exception of a single week, above the minimum, it is clear that the reserves of some of the banks must have been enlarged so as to more than cover the deficits of the banks with the short reserves. The burden of maintaining the credit of our financial centre was thus made to bear, whether consciously or unconsciously, more heavily upon the shoulders of the cautiously managed banks.

A. PIATT ANDREW.

* The reserves of the National Broadway Bank, for instance, averaged below 20 per cent. in the weeks ending May 25, December 14, and December 28, 1901, and March 22, 1902.

† The reserves of the Continental National Bank averaged 14.8 per cent. during the week ending April 20, 1901.

A DISCUSSION OF GROUND RENT.

The Massachusetts Single Tax League, on December 8, gave its annual dinner in Boston; and, as on a former occasion, professional economists were invited to discuss some theoretical aspects of the subject of rent and its relation to taxation. The League exists for the purpose of advocating the experiment and adoption of the Single Tax, a reform in taxation which it holds to be both desirable and practicable; and the object of these special gatherings is to call public attention to the movement, to serve an educational purpose, and to secure and promote, if possible, a general agreement among economists, with the hope that by so doing the subject may receive more attention in academic instruction.

The subject discussed at the recent gathering was: "Ground Rent: What is its nature, operation, and office? What causes it? What maintains it? How much is there of it?"

As to the nature of rent, there seemed to be a general agreement among the speakers that, as land in its origin differed from other agents of production, it not being the product of human labor, and as its value in general was not influenced by the cost of production, therefore rent, or the income received from land, must be differentiated from interest. The income from capital was of a different nature for the reason that capital originated as a product of labor, and the cost of supplying and maintaining it exerted an influence upon the amount of interest it could command. For these reasons there was justification for making a discrimination between land and capital, and for differentiating rent from interest.

Exception, however, was made by one speaker to this general accepted idea: land, as appropriated and used in the United States to-day, was simply one form of capital, and the rent of such land a mere form of interest. To have any economic significance, land must be appropriated and improved

by the expenditure of labor upon it. It was thus analogous to a tool, or any other instrument of production.

While this view of rent was not accepted by all, it was conceded that land, to the settlers of a new country, appeared as a free gift of nature; and in this sense it might be similar to other agents of production in their original form.

Attention was called to the important question of whether this income from natural resources was earned or unearned. This could only be determined by the nature of the natural resource which yielded the income. A study of particular *kinds* of rent was shown to be especially desirable as a guide to the taxation of incomes derived from ground rent. It was also pointed out that rents could not always be distinguished from profits, especially in many a business or speculative undertaking in which land is directly involved.

As to the importance of urban compared with agricultural rent, it was shown that in cities the gradually developed distinction between land and other forms of property was more pronounced, while in the less advanced agricultural communities such a distinction hardly existed. In some of the more valuable urban property the monopolistic element had become predominant, while in many agricultural communities this monopolistic feature had scarcely begun to appear.

It was further urged that, if the annual value of franchises can be considered in any way analogous to rent, good business policy demanded that public services and utilities should be acquired by municipalities on the very best terms possible.

That the Massachusetts Single Tax League is performing a service in an educational way by promoting these discussions, can hardly be doubted. Public opinion needs enlightenment on the real defects of the present system of taxation. The reported discussions of these gatherings must contribute to this end; and, if the possibilities of reform can be urged to the point of actual experiment, at first in a humble and conservative way, such efforts and discussions may not have been in vain.

As to securing a better understanding, or the possibility of dispelling differences, the effort may seem at first somewhat presumptuous and ineffectual. A substantial agreement exists among economists on the general principles involved, as was revealed on this occasion; and, where differences of opinion are already known to exist, and accepted, they are rarely dispelled by discussion. It may likewise be supposed that economists are fully aware of the merits and limitations which this whole question presents, and may, moreover, be relied upon to give it at all times its due and proper consideration.

ARTHUR J. BOYNTON.

THE HOLYOKE WATER CASE.

The many recent attempts to value corporate properties, with the questions as to the correct methods to be used in such cases, and the fact that this is the first dispute to come up under the Massachusetts Municipal Lighting Act, combine to give especial interest to the Holyoke Water Case.* The statutes under which the case arose provided that, where a city voted to undertake its own lighting, any concern already engaged in that business within the place might offer its plant to the city, whereupon the latter became bound to accept the same. When one concern owned both an electric light plant and a gas plant, the city was to buy both. Should the two parties fail to agree as to the plant and the terms of its sale, the questions were to be laid before a commission appointed by the Supreme Court, its decision, on appeal, being subject to revision by that court. Under these provisions the city of Holyoke in December, 1897, voted to establish a municipal electric lighting plant. The Holyoke Water Power Company, which was then supplying the city with light, thereupon offered its gas and electric plants to the city; and, failing to come to an agreement, the questions at issue were submitted to a commission composed of two lawyers and one engineer. Hearings began in April, 1899, since when over one hundred have been held, the case being somewhat delayed by a proposal, finally given up, that the city withdraw from its decision.

The two main points at issue were: 1. What should be included in the plant to be sold? 2. How should that plant be valued? On these points the main provisions of the statute were, that the city should buy —

> such portion of his, their, or its gas or electric plant and property suitable and used for such business in connection therewith, . . . and

*Holyoke Water Power Company, Petitioner, *v.* City of Holyoke, 19+ vols., Boston, 1899.—The final decision of the commissioners has just been made (January, 1903), but is not as yet printed. As it was accepted by both parties, the case does not come before the Supreme Court of the State.

the price to be paid therefor shall be its fair market value for the purposes of its use; no portion of such plant to be estimated, however, at less than its fair market value for any other purpose, including any location or private rights acquired from private persons in connection therewith.... Such value shall be estimated without enhancement on account of future earning capacity or good will or of exclusive privileges derived from rights in the public streets.*

A significant amendment to the original act struck out a paragraph providing for inclusion as an element of value the earning capacity based on actual earnings.

The chief complications in the case arose on the first point from the peculiar connection of the company with the water power used to run the electric plant. This company, chartered in 1859, succeeded the Hadley Falls Company, which owned a dam across the Connecticut River at this point and adjoining tracts of land. The practice was to sell this land outright, and with it the privilege of annually leasing a certain amount of water power, the latter never being actually sold. A bonus was paid for this privilege when the land was bought, and thereafter an annual rental for the power. The company began the electric lighting business in 1888, running the plant with its own water power. For a time they supplied the local street railway with electricity, and in their power system they set aside for use in the electric plant 16 mill powers of water. On ceasing to supply the electric road, it appeared that for lighting purposes there were used in this plant not over 8 mill powers at the peak of the load; while the 24 hour average was about 3 mill powers. In connection with this there was an auxiliary steam plant to furnish power on days when the water was too low. The gas plant, likewise, obtained ½ mill power of water from the company. About this, however, there was no dispute. It was the 16 mill powers of water for the electric plant about which raged the main discussion as to what the plant included. The company declared that the present opportunities to increase the business would give full employment for all the power. Still, in any case, as being a part of the plant, it must all be taken. But the city refused

*Massachusetts Statutes 1891, chap. 370, sect. 12, as amended by Statutes 1893, chap. 454, sect. 5.

to accept any more than could profitably be used for their purpose.

The problem of valuing the structural plant, the land, and the power, aside from the questions of law, especially as to the interpretation of the statutes, and those of fact,— the city's counsel concluded that a price far over $400,000 would be ruinous, whereas the lawyers for the company declared anything much less than $1,400,000 to be robbery,* — also raised the discussion as to the influence upon that value of the intangible factors, such as earnings, depreciation, franchise, opportunity for growth, and the fact of being a "going concern." The structural plant was valued by the company at the contract cost of reproducing it just as it stood, less depreciation from use and age. As the basis of its calculation, the city took the cost of construction of a plant of equal capacity and use, but built according to the latest methods; and then determined what it could afford to pay for the old plant rather than install a new one by deducting from this cost, either the price of such improvements as were required to bring the old plant up to the efficiency of the new one, or the capitalized difference between the cost of operation of the two plants. In effect it thus simply included in depreciation, not only that from use and age, but from any other cause whereby the plant was rendered less efficient for the then existing conditions and needs.

The land, the company declared, should be priced at its most valuable use,— *i.e.*, as a mill site; and to this they added the structural value of the plant. Such a method, the city pointed out, resulted in double valuation; for, though according to statute the land might be thus valued, yet in that case the plant could only be added at its value when dismantled. Further than that, the land "for the purposes of its use" as a lighting plant was only worth as much as land anywhere else equally suitable and obtainable; and, if its value as a mill site were greater than this, then it should not be awarded the city, because unsuitable for the purposes of its use financially. In the case of the water power the city obtained its valua-

*The original price made by the company was $1,000,000. The award of the commissioners, it is understood, is about $700,000.

tion by contrasting the cost to operate the water plant and the auxiliary steam plant with the cost to operate a standard steam plant of like capacity, and concluded that, unless a suitable amount and rent were offered, the power could only have a minus value. The company claimed that the whole 16 mill powers should be put at their highest value for any purpose.

The question as to the influence of the intangible factors upon the value of the physical elements also occasioned much diversity of opinion. The city declared that practically all these intangible factors, such as good will and franchise, were excluded by statute. Both parties admitted additional value from the fact that it was a "going concern"; and this was defined by the city as the charges above contract price incident to installation and the test of its ability to go. The company obtained its estimate of this factor by subtracting the structural value less depreciation from the capitalized net earnings,— a proceeding strongly objected to by the city, which insisted that, as earnings included profit from good will and franchise, they could in no wise be considered as adding to the valuation in this case.

Summing up the case, both parties considered the concern as a going unit. The company valued this unit in relation to its earnings and reproductive cost, but plus the additional value of any part for other uses; in short, by its potential income-earning power. The valuation of the city was based on a comparison with a plant of like capacity such as would now be both physically and financially suitable for the same purpose. CHESTER W. WRIGHT.

[A future number of this *Journal* will contain a fuller account of this case, with an analysis of the decision and the principles upon which it was based.—EDITOR.]

Of interest to students of economics will be a forthcoming document of the United States Attorney-General's office, entitled *Bills and Debates in Congress relating to Trusts*. Only fifty copies were originally printed; but there is every probability that a larger edition of sixteen hundred will follow, with an index and other improvements. The present volume of about a thousand pages was compiled by Mr. J. A. Finch, librarian of the Department of Justice. It covers all material relating to the question from the 50th to the 57th Congress, 1st Session. But one complete set of bills introduced during this time had been preserved in the Document Room of the Senate; and even this was scattered through a great collection of un-indexed volumes. A valuable feature of this compilation consists of its rigid expurgation of all merely political perorations. The matter is entirely and exclusively pertinent to the subject of trusts. A second document of interest, in the same line, will consist of a compilation of all federal decisions on the Sherman anti-trust law. This will, however, consist of a more liberal edition in point of number, easily obtainable through members of Congress.

Students of economic history will be interested in the proposed publication by the Johns Hopkins press, under the editorship of Professor J. H. Hollander, of a series of reprints of important economic tracts, now unavailable for the average student. The series will contain: 1. Three Letters on *The Price of Gold*, by David Ricardo; 2. *An Inquiry into the Nature and Progress of Rent*, by T. R. Malthus; 3. *An Essay on the Application of Capital to Land*, by Sir Edward West, Fellow of University College, Oxford; 4. *A Refutation of the Wage-fund Theory*, by Francis D. Longe. The edition will be limited to five hundred, and will no doubt be speedily exhausted.

RECENT PUBLICATIONS UPON ECONOMICS.

Chiefly published or announced since November, 1902.

An asterisk prefixed to a title indicates a second and more detailed notice of a book announced in a previous number.

I. General Works. Theory and its History.
II. Labor and Capital.
III. Socialism.
IV. Land and Agrarian Problems.
V. Population and Migration.
VI. Transportation.
VII. Foreign Trade and Colonization.
VIII. Money, Banking and Exchange.
IX. Finance and Taxation.
X. Industrial Organization.
XI. Economic History.
XII. Description of Industries and Resources.
XIII. Statistical Theory and Practice.
XIV. Not Classified.

I. GENERAL WORKS. THEORY AND ITS HISTORY.

BARATTA (C.). Principi di sociologia cristiana. Parma. 1902. 16mo. pp. 301. 2.50 l.

BOEHM-BAWERK (E. von). Capital und Capitalzins. Innsbruck: Wagner. 1902. 8vo. pp. 491. 12 m.

[2d edition of Part II.]

BOGGIANO (A.). L' organizzazione professionale e la rappresentanza di classe. Turin. 1903.

[A brief study of trade-unionism as forming the basis of a new corporative organization of society.]

* COOLEY (Charles Horton). Human Nature and the Social Order. New York: Charles Scribner's Sons. 1902. 8vo. pp. 413. $1.50.

[A scholarly though somewhat technical work, sustaining the thesis that society and the individual are not antithetical, but are different aspects of the same thing. Especially valuable chapters are: Suggestion and Choice, Sympathy or Communion as an Aspect of Society, and The Social Aspect of Conscience.]

CORNÉLISSEN (Christian). Théorie de la valeur: réfutation des théories de Rodbertus, Karl Marx, Stanley Jevons, and Boehm-Bawerk. Paris: Schleicher Frères & Cie. 1903. pp. 409.

[The first volume of a proposed library of history and sociology. Gives a number of new definitions, distinctions, and subtle analyses.]

CZOBEL (Stef. von). Die Entwicklung der sozialen Verhältnisse (Die Genesis unserer Kultur, Part II.). Leipzig: Lotus-Verlag. 1902. 8vo. pp. 233. 6 m.

DARROW (C. S.). Resist not Evil. Chicago: Charles H. Kerr & Co. 1903. 12mo. pp. 179. 75 cts.

[Supports Tolstoy's doctrine of non-resistance as applied to the question of crime and punishment.]

DEFOURNY (M.). La sociologie positiviste. Paris: Alcan. 1902. 8vo. pp. 370.

GORTON (D. A.). Ethics: Civil, and Political. New York: G. P. Putnam's Sons. 1902. 12mo. pp. 237. $1.50.

["The volume is not a treatise, be it observed, but rather a series of discourses on living fundamental problems of the day." . . . *Preface*, p. i.]

GROPPALI (A.). Sociologia e psicologia: studi critici. Padua. 1902. 8vo. pp. 204. 4 l.

HALL (G. R.). Human Evolution: An Inductive Study of Man. London: Sonnenschein. 1902. 8vo. pp. 300. 7*s.* 6*d.*

KROPOTKIN (P.). Mutual Aid: A Factor of Evolution. London: Heinemann. 1902. 8vo. pp. 368. 7*s.* 6*d.*

LUZZATTI (G.). Extraprofitti e rendita di monopolio. Padua-Verona. 1902.

MONTEMARTINI (G.). Gli ideali economici della passata e della presente generazione in Italia. Milan. 1902. 16mo. pp. 31. .20 l.

ORANO (P.). Psicologia sociale. Bari. 1902. 16mo. pp. 355. 3 l.

OSTROGORSKI (M.). Democracy and the Organization of Political Parties. Translated from the French by Frederick Clarke, with a preface by Hon. James Bryce. New York: The Macmillan Co. 8vo. Vol. I., 627 pp.; Vol. II., 793 pp. $6.

[Based mainly upon a study of English and American party government. Traces the history, analyzes the tendencies, and suggests remedies for the evils of party government. Preceded by an exhaustive analytical outline.]

POHLE (Prof. L.). Bevölkerungsbewegung, Kapitalbildung u. period. Wirtschaftskrisen. Göttingen: Vandenhoeck & Ruprecht. 1903. 8vo. pp. 92. 1.60 m.

RUHLAND (Prof. G.). System der politischen Oekonomie. Vol. I. Berlin: W. Issleib. 1902. 8vo. pp. 403. 10 m.

SCHMOLLER (G.). Politique sociale et économie politique. Traduction. Paris: Giard et Brière. 1902. 8vo. pp. 445. 7.50 fr.

SELLA (E.). L' uomo e la valanga. 2d edition. Biella. 1902. 1 l.

[In defence of Pantaleoni, attacking the classical economists.]

SQUILLACE (F.). Critica della sociologia. Vol. I. Le dottrine sociologiche. Rome. 1902. 8vo. pp. 539. 10 l.

TIVARONI (J.). Come correggere l' odierna distribuzione della ricchezza. Biblioteca di Scienze Sociale e Politiche. Vol. 39. Turin-Rome. 1902.

VIALLES (P.). La consommation et les crises économiques. Paris: Giard et Brière. 1902. 8vo. pp. 463. 8 fr.

[Regards under-consumption as the cause of commercial crises.]

VOLTERRA (V.). Sui tentativi di applicazione delle matematiche alle scienze biologiche e sociali. [Inaugural lecture, Univ. of Rome.] Rome. 1902. 8vo.

WOOD (Frederic). Government and the State: A Consideration of Elementary Principles and their Practical Application. New York: G. P. Putnam's Sons. 8vo. pp. 310. $2.

[A scholarly examination of the foundations of government, its right to be, its sphere of action, and its essential forms.]

In Periodicals.

BRANZOLI-ZAPPI (E.). La beneficenza dello stato. Giorn. degli Econ., Dec.

CANNAN (E.). The Practical Utility of Economic Science. Econ. Journ., Dec. [Very suggestive.]

CASSEL (Dr. G.). Der Ausgangspunkt der theoretischen Oekonomie. Zeits. d. ges. Staatsw., 58, Heft 4.

LLOYD (A. H.). The Social Will. Amer. Journ. of Sociol., Nov. ["Society . . . is a party to every deed and every thought of the individual."]

LORIA (A.). Un mistico del materialismo: Beniamino Kidd. Nuova Antol., Nov.

O'SHEA (M. V.). Work and Play in Adjustment to the Social Environment. Amer. Journ. of Sociol., Nov. ["Notes on Groos's 'The Play of Man.'"]

PARETO (V.). Di un nuova errore nello interpretare le teorie dell' economia matematica. Giorn. degli Econ., Nov.

SCORZA (G.). Osservazioni su alcune teorie di economia pura. Giorn. degli Econ., Dec.

SHELDON (W. L.). The Evolution of Conscience as a Phase of Sociology. Amer. Journ. of Sociol., Nov.

SIMMEL (G.). The Number of Members as Determining the Sociological Form of the Group. I. Amer. Journ. of Sociol., July and Sept.

SMALL (A. W.). The Scope of Sociology. VII. Amer. Journ. of Sociol., Sept. [Deals with "The Primary Concepts of Sociology."]

SPANN (O.). Die Lehre Stammler's vom sozialpsychologischen Standpunkt aus betrachtet. Zeits. f. d. ges. Staatsw., 58, Heft 4.

TOLMAN (F. L.). The Study of Sociology in Institutions of Learning in the United States. II. Amer. Journ. of Sociol., July. [A quantitative statement continued from the May number.]

II. LABOR AND CAPITAL.

A BLACK-LISTED MACHINIST. Capital and Labor. Chicago: C. H. Kerr & Co. 1902. pp. 203. 25 cts.

[Somewhat radical in tone, advocating socialism.]

ALMA (R. S.). I lavoratori e la produzione in Sicilia. Parte I. Il lavoratore siciliano. Naples. 1902. 8vo. pp. 40.

BECK (Dr. Herm.). Lohn- u. Arbeitsverhältnisse in der deutschen Maschinenindustrie am Ausgang des 19 Jahrh. Dresden: O. V. Böhmert. 1902. 8vo. pp. 74. 1.50 m.

[In Untersuchungen aus dem volkswirt.-stat. Seminar der techn. Hochschule zu Dresden.]

BLAUSTEIN (Dr. Arth.). Die Entstehung der gewerkschaftlichen Arbeiterbewegung im deutschen Sattlergewerbe. Tübingen: J. C. B. Mohr. 1902. 8vo. pp. 148. 4.50 m.

[In volkswirtschaftl. Abhdlgn. der badischen Hochschulen.]

BÖHMERT (Prof. V.). Die Gewinnbeteiligung der Arbeitnehmer in Deutschland, Oesterreich, u. d. Schweiz. Dresden: O. V. Böhmert. 1902. 8vo. pp. 128. 3 m.

BOURGEOIS (L.) et CROISET (A.). Essai d'une philosophie de la solidarité. Paris: Alcan. 1902. 8vo. pp. 287. 6 fr.

[A series of lectures by M. Bourgeois, Croiset, Gide, Buisson, and others.]

BOURGUIN (M.). L'application des lois ouvrières aux ouvriers et employés de l'état. Paris: Rousseau. 1902. 18mo. pp. 180. 3 fr.

CALMETTES (P.). Le travail de nos ouvriers modernes d'art et d'industrie. Paris: Flammarion. 1902. 8vo. 4.50 fr.

FUSTER (E.). Rapport sur les retraites ouvrières en Allemagne, adressé à M. le Ministre du Commerce. Bar-le-Duc: Contant-Laguerre. 1902. 8vo. pp. 72.

[Favors compulsory insurance.]

*GHENT (W. J.). Our Benevolent Feudalism. New York: Macmillan Co. 12mo. pp. 202. $1.25.

[Calls attention to the danger that the great power and prestige of business magnates may not only control the press and public opinion in their own interests, but develop new ideas of morality and business honesty which will still further enhance their power and prestige.]

GIANTURCO (E.). Sul contratto di lavoro. Napoli. 1902. 8vo. pp. 72. 1.50 l.

GIGLIOLI (G. Y.). Le malattie del lavoro. Rome. 1902. 8vo. pp. 502. 5 l.

HERZ (Dr. H.). Arbeitsscheu und Recht auf Arbeit. Kritische Beiträge zur oesterreich. Straf und Sozialgesetzgebung. Vienna: F. Deuticke. 1902. 8vo. pp. 105. 3 m.

JASTROW (Dr. J.). Socialpolitik und Verwaltungswissenschaft. Vol. I. Arbeitsmarkt und Arbeitsnachweis. Gewerbegerichte und Einigungsämter. Berlin: G.

Reimer. 1902. 8vo. pp. 562. 10 m.

MÜNSTERBERG (M.). L'assistance. Traduit par R. Bompard. Paris: Masson. 1902. 18mo. pp. 326. 3.50 fr.

OFFICE DU TRAVAIL. L'apprentissage industriel. Rapport sur l'apprentissage dans l'imprimerie. 1899–1901. Paris: Impr. National. 1902. 8vo. pp. 320.

OLIVER (Dr. T.). Dangerous Trades. New York: E. P. Dutton & Co. 1902. 8vo. pp. 891. $8.

[Papers by numerous British specialists,— physicians and health officers, factory inspectors, engineers and statisticians. Covers a very wide field, and includes results of recent exhaustive government investigations in England. One of the few English works on the subject and probably the most valuable in any language.]

OVERBERGH (Van). La grève générale belge d'avril, 1902. Brussels: Schepens. 1902. 8vo.

POTTER (C.) The Citizen in his Relation to the Industrial Situation. New York: Chas. Scribner's Sons. 12mo. pp. 248. $1.

[A series of six addresses before the students of Yale University on labor, corporations, trusts, and related questions.]

PRUDHOMMEAUX (D. F.). Le familistère illustré. Paris: Guillaumin & Cie. pp. 85.

ROSTAND (E.). L'action sociale par l'initiative privé, avec des documents pour servir à l'organisation d'institutions populaires et de plans d'habitations ouvrières. 3re serie. Paris: Guillaumin. 1902. 8vo. pp. 736. 15 fr.

RUSSIAN MINISTRY OF FINANCE. Materialien zur Arbeiterfrage. Das russ. Gesetz u. d. Arbeiter. Denkschrift d. russ. Finanzministeriums üb. d. Revision d. Strafgesetze, betr. Arbeitseinstellungen u. Kontraktbruch, sowie üb. d. Nützlichkeit von Arbeiterorganisationen zum Zwecke der Selbsthilfe. Stuttgart: J. H. W. Dietz Nachf. 1902. 8vo. pp. 52. 0.80 m.

SOUDEK (Dr. Rich.). Die deutschen Arbeitersekretariate. Leipzig: Jäh & Schunke. 1902. 8vo. pp. 110. 2.50 m.

[In Stieda's Volkswirt. u. wirtschaftsgeschichtl. Abhandlungen.]

THURY (M.). Visite imaginative à un camp de travail le 1re Mai, 1922. Paris: Fischbacher. 1902. 8vo. pp. 126. 3 fr.

WRIGHT (Carroll D.). Some Ethical Phases of the Labor Question. Boston: American Unitarian Association. 12mo. pp. 207. $1.

[Four popular addresses on the relation of religion to sociology, of political economy to the labor question, the factory system, and prison labor.]

* UNSIGNED. Industrial Conciliation: Report of the Proceedings of the Conference held under the Auspices of the National Civic Federation. New York: G. P. Putnam's Sons. 1902. 12mo. pp. 266.

[Papers, addresses, and discussions by prominent employers, labor-unionists, economists, and publicists at conferences of 1900 and 1901.]

———. I problemi del lavoro. (New monthly periodical, Aug., 1902.) Rome.

———. Statistica degli scioperi avvenuti nell' industria e nell' agricoltura durante l' anno 1900. (Ministero di agricoltura, etc.) Rome. 1902. 8vo. xiii, 154. 1 l.

———. Statistique des grèves et des recours à la conciliation et à l'arbitrage survenus pendant année 1901. Paris: Impr. Nat. 1902. 8vo. pp. 400.

In Periodicals.

BARTER (F.). Apprentices in Great Britain. Cassier's, Nov.

BISHOP (J. B.). Coal Strike. Int. Quarterly, Dec.

CLARK (J. B.). Authoritative Arbitration. Pol. Sci. Quarterly, Dec. ["A limited amount of anarchy" is better than "the freest breaking of strikes." "As between courts and mobs, we are relying on mobs; but this is only because we have not ourselves proved the efficacy of courts."]

CUNNIFF (M. G.). Labor Union Restriction of Industry. World's Work, Oct.

EASLEY (R. M.). Organized Labor: What it has learned. McClure's, Oct.

ELLIS (Leonora B.). Movement to restrict Child Labor. Arena, Oct.

ELY (R. T.). The Report of the Industrial Commission. Labor. Yale Rev., Nov.

FLOWER (B. O.). Abuse of the Power of Injunction. Arena, Oct.

FRANKENBERG (H. v.). Die Ueberwachung der Rentenempfaenger. Jahrb. f. Gesetzg., 1902, Heft 4.

GANTT (H. L.). Rewarding Machine-shop Labor. Cassier's, Nov.

GHIO (P.). Les retraites ouvrières en Italie. Musée Social, Dec.

HOBSON (J. A.). Compulsory Arbitration. North Amer. Rev., Nov.

HORACK (F. E.). Horseshoers' Strike of Philadelphia. Amer. Journ. of Sociol., Nov.

LEIGH (J. G.). The Ethics of Employment. Econ. Rev., Oct.

MAXWELL (G.). A Fixed Wage: Is it Just? World's Work, Oct.

MITCHELL (J.). The Coal Strike. McClure's, Dec.

MURIALDI (G.). L' organizzazione del lavoro nel porto di Genova. I Problemi del Lavoro, Aug., Sept.

PAGE (T. W.). The San Francisco Labor Movement [of 1901]. Pol. Sci. Quarterly, Dec. ["The point really at issue,—the exclusion of non-union laborers from employment."]

PARKS (E. H.). Apprentices in the United States. Cassier's, Nov.

PINKUS (N.). Artels. Econ. Journ., Dec. [A form of labor organization in Russia.]

REES (J. D.). Wages and Means: East and West. Nineteenth Century, Nov. [The standard of life of Indian peasants.]

ROBERTS (Peter). The Anthracite Conflict. Yale Rev., Nov. [An illuminating statement of facts; judicial in spirit.]

SIEGFRIED (A. & J.). American Workman and the French. Int. Quarterly, Dec.

WALDO (F. L.). What Employers say of Profit-sharing. World's Work, Dec.

WELLMAN (Walter). The Settlement of the Coal Strike. Amer. Rev. of Rev., Nov.

WINSTON (A. P.). Trade Unions and the Superior Workman. Atlantic Monthly, Dec.

WOLFF (H. W.). Co-operation as a Link among Nations. Econ. Rev., Oct. [The International Co-operative Alliance.]

WYCKOFF (W. A.). Among London Wage-earners. II. Scribner's, Oct.

WYMAN (B.). Coal Mines and the Law. Green Bag, Nov.

III. SOCIALISM.

BERNSTEIN (E.). Socialisme et Science, with a special preface by the author for the French edition. Paris: V. Giard & E. Brière. 1903. 12mo. pp. 61.

[An attempt to establish the relation between socialism and science, which Marx failed to accomplish.]

DESTREE (Jules) and VANDERVELDE (Émile). Le Socialisme en Belgique. Second edition. Paris: V. Giard & E. Brière. 1903. 12mo. pp. 498. 3.50 fr.

[A full and sympathetic account of the rise and present position of socialism in Belgium, together with its programme.]

FRÜHAUF (Dr. Adalb.). Die Gruppenbank. Versuch eines sozialen Umbaues durch genossenschaftl. Selbsthilfe. Dresden: E. Pierson. 1902. 8vo. pp. 160. 3 m.

KAUTSKY (Karl). La politique agraire du parti socialiste. Translated from the German by Camille Polack. Paris: V. Giard & E. Brière. 1903. 8vo. pp. 220. 4 fr.

[Following the author's former work on Agrarfrage, this volume

outlines the practical conclusions and the programme of the socialist party.]

LASSALLE (F.). Discours et pamphlets. Traduits par V. Dave et Rémy. Paris: Giard et Brière. 1902. 18mo. 3.50 fr.

LEVASSEUR (E.). Les études sociales sous la Restauration. Saint Simon et Fourier. Paris: Giard et Brière. 1902. 8vo. pp. 56. 2 fr.

MAZEL (H.). Quand les peuples se relèvent. Paris: Perrin. 1902. 18mo.

[Portrays in dialogue an individualistic Utopia.]

MORRIS (W.). Architecture, Industry, and Wealth. Collected Papers. London: Longmans. 1902. 8vo. pp. 376. 6s.

*SPALDING (J. L.). Socialism and Labor and Other Arguments. Chicago: A. C. McClurg & Co. 12mo. pp. 225. 80 cts.

[A series of popular essays and addresses.]

In Periodicals.

NEUMANN (Fr. J.). Wer ist heute Sozialist? Jahrb. f. Nat. Oek., 24, Heft 4.

RACCA (V.). Giorgio Sorel e il socialismo. Riforma Sociale, Nov.

IV. LAND AND AGRARIAN PROBLEMS.

AUGÉ-LARIBÉ. Grande ou petite propriété. Histoire des doctrines en France sur la répartition du sol et la transformation industrielle de l'agriculture. Montpellier: Coulet. 1902. 8vo. pp. 217. 4 fr.

BORCHARDT (A.). Die bäuerlichen Verhältnisse im südwestlichen u. zentralen Russland. Berlin: P. Parey in Komm. 1902. 8vo. pp. 66. 2 m.

CARVILLE (F.). Agriculture. Guide pratique pour fonder les principales institutions économiques agricoles françaises. Paris: Giard et Brière. 1901. 8vo. 3.50 fr.

*FERNOW (B. E.). Economics of Forestry (Library of Economics and Politics). New York: T. Y. Crowell & Co. 1902. 12mo. pp. 520. $1.50.

[A valuable study of a most important subject. Gives special attention to forest conditions in the United States.]

FERRIGNI (M.). Le stime e le scorte nella mezzeria toscana e la loro valutazione. Florence. 1902. 1.50 l.

FRANZ (Rob.). Die landschaftlichen Kreditinstitute in Preussen. Ihre rechtl. u. finanziellen Verhältnisse u. ihre geschichtl. Entwicklung. Berlin: F. Schneider. 1902. 8vo. pp. 417. 12 m.

GOLTZ (Thdr. v. der). Geschichte der deutschen Landwirtschaft. Vol. I. Von den ersten Anfängen bis zum Ausgang des 18 Jahrh. Stuttgart: J. G. Cotta Nachf. 1902. 8vo. pp. 493. 10 m.

GORET (J.). Les associations agricoles dans les pays de langue flamande de France et de Belgique. Paris: Rousseau. 1902. 8vo.

HAGGARD (H. R.). Rural England: An Account of Agricultural and Social Researches carried out in 1901 and 1902. London: Longmans. 1902. 2 vols. 8vo. pp. 1244. 36s.

[Expanded from letters contributed to the *Daily Express*.]

KNAPP (Dr. Thdr.). Gesammelte Beiträge zur Rechts- und Wirtschaftsgeschichte vornehmlich des deutschen Bauernstandes. Tübingen: H. Laupp. 1902. 8vo. pp. 497. 9 m.

LARBALÉTRIER (A.). Les industries de la ferme. Paris: Larouse. 1902. 8vo. pp. 216. 2 fr.

LEVY (Dr. Herm.). Die Not der englischen Landwirte zur Zeit der hohen Getreidezölle. Stuttgart: J. G. Cotta Nachf. 1902. 8vo. pp. 137. 3 m.

[In Münchener volkswirtschaftliche Studien.]

LORENZONI (G.). La cooperazione agraria nella Germania moderna. Vol. II. La costituzione sociologica e giuridica ed i problemi

economici e sociali della cooperazione agraria. Trient. 1902. 6 l.

MAGINI (L.). Gli scioperi dei mezzadri nel circondario di Montepulciano: appunti e documenti. Siena. 1902. 8vo. pp. 63. 1 l.

MISES (L.). Die Entwicklung des gutsherrlichbäuerlichen Verhältnisses in Galizien (1772–1848). Vienna: F. Deuticke. 1902. 8vo. pp. 150. 5 m.

[In Wiener staatswissenschaftliche Studien.]

MORAS (A.). La crise du blé. Paris: Rousseau. 1902. 8vo. pp. 196.

OGILVY (A. J.). Phases of the Land and Labour Question. London: Land Nationalization Society. 1902. 8vo. pp. 128. 6*d*.

[An attempt to show that most schemes for social improvement are conditioned upon the nationalization of land values.]

POGGI (T.). La mezzadria nel l' agricoltura moderna. Atti del r. istituto venato di scienze, lettere ed arti, T. LXI. Venice. 1902. 8vo.

RANUZZI (S. C.). Produzione e commercio delle uova in Danimarca. (Ministero d' agricoltura.) Rome. 1902. 8vo. pp. 56.

REGOLIOSI (O.). Democratizzazione della terra e redenzione della plebe rurale. Mortara. 1902. 8vo. pp. 231.

SMILARI (A.). Gli scioperi agricoli in Italia: cause e rimedi. Rome. 1902. 8vo. pp. 24.

SORESI (G.). Annuario della cattedra ambulante d' agricoltura per la provincia di Milano (1901). Vol. III., Parte I.: Relazione generale. Parte II.: Relazione tecnica. Lodi. 1902. 8vo. pp. 230.

STIVANELLO (L. C.). Il problema agrario nei rapporti fra proprietari e lavoratori. Atti del r. istituto venato di scienze, lettere ed arti, T. LXI. Venice. 1902. 8vo.

UNSIGNED. Scioperi agrari. I recenti, in Italia e i loro effetti economici. Rome. 1902. 8vo. pp. 112. 1 l.

[Results of an inquiry by the Soc. degli agric. ital.]

In Periodicals.

BAILEY (L. H.). The Report of the Industrial Commission: Agriculture. Yale Rev., Nov.

CARO (G.). Zur Agrargeschichte der Nordöstschweiz und angrenzender Gebiete vom 10. bis zum 13. Jahrhündert. Jahrb. f. Nat. Oek., 24, Heft 5.

COLAIANNI (N.). Il movimento agrario in Italia. Rivista d' Italia, Nov.

COLETTI (F.). Il criterio economico nella stima e nel compenso dei miglioramenti rurali. Riforma Sociale, Oct.

GIOSKOV (E.). Co-operative Agriculture in Denmark. Econ. Rev., Oct.

VALENTI (G.). Il credito e il fabbisogno di capitale dell' agricoltura italiana. Giorn. degli Econ., Nov.

WILBUR (H. W.). Conditions which affect Beef Prices. Gunton's, Oct.

UNSIGNED. Sonnino, L' on, e la questione meridionale. Nuova Antol., Nov. [Sonnino's speech at Naples, November 9, outlining his proposals for agrarian reforms in Southern Italy.]

V. POPULATION AND MIGRATION.

GHINASSI (P.). Gli agricoltori italiani nell' Argentina. Bologna. 1902.

GROSSI (V.). Politica de l' emigrazione e delle colonie. Rome: 1902. 8vo. pp. 168.

[Summary of lectures at the royal diplomatic and colonial school of Rome.]

LE CREPS (A.). De la dépopulation et de la répopulation de la France. Toulouse: Labouche. 1902. 8vo. pp. 80. 2.80 fr.

*RIIS (J. A.). The Battle with the Slum. New York: The Macmillan Co. 1902. 8vo. pp. 465. $2.

[A sequel to "How the Other

Half lives." An exceedingly hopeful view, based on the progress of the last few years.]

WOODS (Robert A., editor). Americans in Process: a settlement study by residents and associates of the South End House, Boston. Boston: Houghton, Mifflin & Co. 1902. 12mo. pp. 389. $1.50.

[A description of conditions in the North and West Ends, Boston. Maps and diagrams showing nationalities, types of buildings, industrial grades, and institutions. A thorough piece of work.]

In Periodicals.

CAVAGLIERI (G.). L' emigrazione dal polesine 1881-1901. Riforma Sociale, Oct., Nov.

FERROGLIO (G.). Ultime osservazioni sul fenomeno dell' urbanismo. Riforma Sociale, Nov.

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HEMD (A. S.). The Foreign Invasion of Canada. Fort. Rev., Dec. [More British immigration to be desired.]

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